MADAGASCAR YOUNG ADULT TRANSITIONS SURVEY - Preliminary Descriptive Results

Catalina Herrera Almanza, Frédéric Aubery, Francesca Marchetta, Aurore Pelissier, Harivelo Rajemison, Faly Rakotomanana, David Sahn, Kira Villa

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Abstract

This report provides a preliminary descriptive analysis of the Madagascar Youth Transition Survey 2012–13 (*Enquête Statistique sur les itinéraires de vie des jeunes à Madagascar 2012-13*).

This survey is the last round of a cohort panel following children from around age 8 (for about half the sample) or age 15 (for the remainder) to their early 20s. The first two surveys were mainly focused on schooling and skills and were complemented by school surveys and by community surveys. This new survey re-interviewed the cohort members and their households and updated the community information. This last round of the survey was designed to improve our understanding of the determinants and impacts of the major life course transitions—involving marriage, family, schooling, and work—of young people in Madagascar. The purpose of this report is to provide the reader with a sense of the scope and nature of the data set and with some information about the lives of young adults in Madagascar.

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INTRODUCTION

The transition from adolescence to adulthood is a critical period in the life course. The decisions that young people and their families make regarding transitions from school into work, marriage, and parenthood will affect their opportunities and well-being for the rest of their lives. For example, given the exhaustively documented link between the level of education and individual earnings, choices about how long to continue schooling will be a major determinant of the eventual standard of living enjoyed by young men and women. For young women in particular, changes in the timing of other key transitions, such as a longer delay of marriage and motherhood, may lead to significant changes in their ability to engage in productive and remunerative work and to achieve economic and social parity with men. Delays of marriage and motherhood may also significantly reduce health risks to young women that occur through early pregnancy and heightened HIV risk from older spouses.

In developing countries, these choices also have profound implications for aggregate welfare and economic growth. If young women start families later in life and consequently have fewer dependents, more family resources will be available for savings and investment, and more female labor available to fuel economic development. This "demographic dividend" has already greatly benefited East Asia, but in other regions, notably sub-Saharan Africa, it has yet to occur. Further, there are widely documented associations of small family size and better child health and schooling outcomes, as well as between later age at marriage or childbearing and these child outcomes. Hence delays in childbearing and reduced fertility are likely to have important benefits for the well-being and healthy development of children.

Many factors condition the early life course transitions of young people: family background, the policy environment (e.g., school quality and access, family planning services or promotion), unplanned economic and health events, community norms, and incentives such as labor demand. These transitions can also be conditioned by prior decisions and behaviors that are largely or completely irreversible, such as leaving school early or having a child. These behaviors therefore are inherently dynamic and path-dependent.

For disadvantaged young people, the nature and timing of the transitions to adult roles as labor force participants, spouses, and parents will significantly determine whether they are able to escape from the poverty of their parents, or if this poverty will persist across generations. The analysis of early life course transitions is therefore closely linked to another important research area attracting considerable attention in both developed and developing countries: intergenerational economic mobility, or conversely, the intergenerational transmission of poverty. Studies from widely varying settings demonstrate strong associations between the education and incomes of parents and those of their offspring. What is less clear, especially in developing countries, is the extent to which this relationship is truly causal, and how parental and household characteristics, as opposed to the institutional environment (including for example, labor market conditions) and specific policies, shape outcomes for young people. Understanding the phenomenon of poverty persistence at the individual or household level, in turn, promises to shed light on the broader riddle of why some economies, or subgroups within an economy, are able to move out of poverty and others do not.

Potentially, research has a great deal to contribute to the design of policies to improve the lives of young people and break the transmission of poverty from one generation to the next. The need for such policy-relevant research is nowhere greater than in sub-Saharan Africa, where poverty

is more widespread and persistent than in any other region, where levels of human capital and productivity are the lowest, and where low schooling, early marriage, and high fertility of women remains pervasive, hampering progress toward economic and social gender equality.

Our project made substantive contributions in two ways. First, we collected and made publicly available high-quality panel data from Madagascar covering young people from early primary school age to early adulthood, data that will provide the required longitudinal dimension and will be designed to permit a range of non-experimental approaches to causal inference. These surveys form a cohort panel following children from around age 8 (for about half the sample) or age 15 (for the remainder) to their early 20s. The 2003 and 2004 household surveys were complemented by community surveys and school surveys that provided detailed information on the local environment and services, including family planning services. These new surveys re-interviewed the cohort members and their households and updated the community information. The survey instrument for the second 2012–13 surveys can be viewed at:

<http://www.saga.cornell.edu/Madagascar2010/survey2010.html>

The purpose of this report is to present some descriptive statistics and related analysis of the 2012–13 survey data. We do not attempt to be comprehensive. Rather, our purpose is to provide the reader with a sense of the scope and nature of the data set and some information about the lives of young adults in Madagascar.

The remainder of this report is organized as follows: In Section A we present a brief description of the survey. This is followed, in Section B, with a presentation of descriptive statistics that correspond to the major modules or themes covered by the survey. They are as follows: Households characteristics, Cohort member basic characteristics, Education, Test scores, Employment and earnings, Health, Fertility, Family planning and anthropometric outcomes, Migration, Personality traits, Entrepreneurship, and Agriculture.

THE SURVEY

Panel household survey data, almost non-existent in developing countries a few decades ago, are now considerably more common. What remains quite rare, however, are long-term panels covering periods of more than a few years. Such data are needed to properly understand many important aspects of behavior as related to human capital accumulation and poverty transmission across generations, and impacts of policy on both issues.

As indicated, the overall project uses two periods of data collection: first, the Madagascar Study on Academic Progress and Academic Performance in Madagascar (EPSPAM) survey from 2004, and second, the Madagascar Youth Transition Survey 2012–13. In the second survey, we revisited most of the approximately 1800 households in the earlier sample, and administered specialized surveys (described below) to members in each household in the cohort of children born between 1986–1989. Some of these individuals were still living in their 2003/4 households; others will have moved away. Procedures used for finding and interviewing the latter group are described below.

The survey instruments consisted of: (1) primary surveys of the cohort members (the “target respondents”); (2) re-surveys of their originating households; and (3) an update of the community

surveys on local infrastructure and services. We describe these survey instruments next, and then discuss procedures for tracking original respondents for the re-survey.

(1) Individual surveys of target respondents: The surveys administered to the cohort sample (aged 21–24 in 2002–13) were the primary survey instrument and covered the following main areas: education, migration, and employment histories; illness episodes and disability; marital and childbearing history; living arrangements; and assets and transfers to and from other households. The format of these modules was generally designed to be the same as in the 2003/4 surveys so as to facilitate constructing full histories using both data sets. As in the earlier survey, the data provided the basis for event history analysis of migration, work, and other life course transitions. It was designed to capture all such events and their timing since the previous survey. In some cases, additional detail relative to the earlier survey modules was gathered to obtain more information for the analysis of early life course transitions. We highlight a few of these areas:

Contraceptive use and fertility histories: Administered to the women in the target cohort sample, this new module was patterned after similar modules in Demographic and Health Surveys. It recorded knowledge and use of different methods of contraception, attitudes toward contraception, and desired family size and spacing. Fertility histories were gathered to provide information on the timing of all pregnancies and live births and use of pre- and post-natal care for each birth. Respondents were also asked about contraceptive availability (distance and travel costs to different sources), price, and periods when they could not be obtained.

Transfers and remittances: For many young men and women no longer living at home, transfers from parents and others could be an important means of support. In other cases, individuals who are working may remit funds to their originating households. To understand these flows and how they evolve, information on amounts and relationships with senders or recipients was gathered for each year the individual had been away from home (the 2003 survey recorded this information for the prior 12 months only). Information was also recorded on assets at marriage and bride price, or dowry, if relevant.

Expanded education module: Unusually detailed information was collected on the education of all cohort members to provide a complete record of individual schooling careers that could be linked to household events and characteristics, community factors, and policies. The information gathered included, among many other variables, school entry and completion or quitting ages and dates, grade repetitions and schooling interruptions and their timing, time allocated to schoolwork, education expenses, and financial assistance from schools and relatives for education purposes. Travel times and distances to schools attended, as well as schools not chosen, were recorded; the schools were identified using names and predetermined identification codes for matching to surveys of schools and the community that were also conducted.

Employment, job search, and training: We recorded standard information on work (for pay and in-kind and detailed information on work patterns for children, including detailed questions on the cohort members' job searches and desired employment, training (on and off the job), and pay. This module was designed to capture, in a level of detail not often seen in most household surveys, the economic activities and time allocation of children and youth, including household work, farm or enterprise work, and wage labor. Information included the year that work began and the time allocated to this work and to schoolwork at that time and currently for those still enrolled.

Parents' family backgrounds: Atypically for household surveys, a range of questions was asked about the childhoods and family backgrounds of each adult in the household. These included questions on their own parents' state of health when they (the adult respondents) were 10 years old, whether their parents were absent at that time, and the year of death if the parents had died. Adult respondents were also asked a set of questions pertaining to the health and education infrastructure of the place they lived as children: presence of a primary school and lower and upper secondary schools within 5 km of their homes, and presence of a health clinic. Information was also collected on basic characteristics of their family's dwelling, their parents' education levels (as noted), as well as their occupations, and the number of older and younger brothers and sisters and their completed education. These data allowed for an exploration of the links between parents and children over three generations, as well as provided means of statistically identifying the impact of parental schooling and wealth on children's outcomes.

Histories of economic and health events: Many questions were asked about events affecting family and individual well-being, typically referring to the 10-year period before the survey. These events included parental death, illness, or disability of all individuals in the household; unemployment spells; enterprise failure, years of unusually bad or good harvests, and enterprise revenues; and planned and unplanned losses or acquisitions of land, livestock, and other assets. Information was collected on the year of occurrence and duration, where relevant. This information provided a year-by-year picture of major economic and health events affecting the members of the household, and was updated in the recent survey. Further, the data on exogenous shocks also provided a means of statistically identifying endogenous behaviors such as schooling duration.

Cognitive tests: Each respondent took short tests of ability in math and French. As in the 2003/4 survey, there were both oral and written math tests. As before, we developed and tested the questions for the tests in collaboration with local institutions and with the assistance of other experts in test design. There were some common items in the 2013 and 2003 tests to facilitate comparisons across surveys.

(2) *Household surveys (of originating households):* In the vast majority of cases, the process of locating members of the cohort involved first contacting the individual's 2003 household. Whether the target respondent was living at home or had moved away, we administered during these contacts a relatively short survey to the head or other members of the household on events and changes since the previous interview. The main motivation for these interviews was to update information on important economic or life course events experienced by the household and its members. This included information on various outcomes (education, health, marriage, and childbearing, etc.) for younger and older siblings of those in the cohort. This information was useful because, as described below, several estimation techniques as well as questions of interest rely on variation across children of different ages within a household. The questionnaires followed the basic event-history structure of the 2003/4 surveys. Since survey personnel needed to visit these households as the first step in tracking the cohort members, these household surveys raised no challenging logistical or financial issues. Of course, in many instances a target respondent was still living in the households, in which case there essentially was a single interview process.

In a number of cases, follow-up did not involve visiting the original households. This occurred when the household has moved (or dissolved), and we obtained information on the (separate)

location of the target cohort members from other sources in the community. In these cases, information on key household events of the original household were obtained from the target respondents: these individuals, now adults and (presumably) maintaining ties with their families, know, for example, about parental illness or death, and a father's retirement or loss of employment. Respondents were also asked basic questions about their siblings, such as schooling and marital status. Enumerators administered this short module using preprinted lists of household members' identification codes and names from the 2003 survey.

(3) *Community surveys:* These re-surveys were implemented in each of the original 2004 clusters. They updated information on the availability and timing of introduction of various services and programs, including health and family planning services and schools, and other important developments in the community. This information was relevant for understanding the schooling and family transitions of young people occurring since the last survey. For members of the cohort who now reside elsewhere, the information gathered in these surveys obviously captured their exposure to different services only up to the period they left. We did not expect it to be feasible to gather detailed community information in the areas to which such individuals have migrated, given their dispersion to different towns and communities. However, the individual survey instruments collected some information on local services, e.g., the nearest available source of family planning services and contraception, as noted above.

1. Tracking Respondents

Longitudinal data are only as good as the follow-up whereby baseline participants are relocated and re-interviewed. When migration is substantial and selective, inferences about changes in household well-being over time, for example, if based only on panel analysis of those who remain in their original locations, may be very misleading. For analyzing behavioral dynamics and welfare outcomes for people who have recently entered adulthood, the hazards may be particularly acute. For these individuals, geographical mobility is often a key aspect of life course transitions, as young people move out of their parents' households (and often, away from their home communities) to marry or work. Achieving high rates of follow-up in developing country contexts was challenging but possible, as we identified adequate resources and effort to do so.

The tracking and re-interview of the 2003/4 survey respondents took place in two main stages. In the first, survey teams returned to the original sample clusters with pre-printed lists of household addresses and names of household members and their basic characteristics. If a household was no longer at its original location, inquiries were made with neighbors and community leaders as to its current location. If the household had moved to another residence in the cluster or reasonably close by, it was visited in the same initial stage. For located households, survey personnel asked about the residence of children in the cohort, now aged 21–24. Those still living in the same households (expected to be about half, as discussed below) or in other locations nearby were interviewed in this phase. Locations, addresses, and phone numbers of other target respondents were obtained for later interview. The household itself was asked to respond to a questionnaire updating information since the 2003 survey, as described above.

For target respondents who were no longer in their original locations, there were two basic situations: First, the family of the respondent had been located in the first stage and information on current residences of the target individual obtained. Second, the original household itself had moved.

In the latter, the teams asked neighbors, community leaders or administrators, shopkeepers, and others about the location of the household, and of the target respondents specifically, as these could differ. Other panel survey experience in developing countries, including our own experience in 2003 in locating children in the original PASEC sample, suggested that it would not be difficult to obtain this information in the vast majority of cases. The second stage consisted of using this information to plan and carry out the interviews of target respondents who are in new locations.

As result of these efforts, we achieved a target attrition rate of less than 10 percent.

2. Other Survey Implementation Issues

The objective of collecting high quality data was achieved, due to several factors. One was the extensive experience of the institutions in conducting survey work in this and similar environments. A second was that the various institutions had worked successfully in the previous survey to produce high-quality data that yielded valuable and original analyses. A third was that this was a panel data collection, using similar instruments as before and using the same households and individuals. This had many benefits, among them that both households and communities in the panel have been sensitized to the survey process, so outreach will not be difficult.

(1) Interviewer and supervisor training: Many of the experienced individuals involved in the previous survey were available for work on the new surveys. As before, training was the key to success, requiring several weeks. We trained more personnel than were eventually selected for the work, with selection based on instructor evaluations and performance on tests at the completion of training. As in the 2003/4 surveys, the number of interviewers was kept relatively small with each team working under a highly trained supervisor.

(2) *Field testing:* The household and individual (cohort) questionnaires and the cognitive tests were field tested in several rural and one urban location. Adequate time was allotted for thorough review and revision of questionnaires and tests as well as the data entry program as required.

(3) *Data entry and data quality*: Problems of electricity supply in many rural areas made computerized data collection, otherwise advantageous, problematic. In addition, not all interviewers were comfortable with using computers to note responses. Therefore, we stayed with the standard paper-and-pencil interview, as used for the previous survey. The data entry programs were developed in Madagascar and were written with complex consistency checks that were built into the program.

DESCRIPTIVE DATA

1. Households characteristics

This section presents descriptive statistics on the households where cohort members live. The number of households is lower than the number of cohort members since some of them live in the same household.

Among the 1,555 households interviewed, 697 are defined as “original households,” meaning that they are the same as in 2003/4 survey, while 858 are newly established households (Table 1.1).

In terms of household size, the average number of household members is 4.69, and the distribution is shown in Table 1.2. Approximately 60% of the sample households have four or more members, and the percentage of very large households is not negligible, with 15% per cent of the sample households having more than seven members.

Table 1.3 shows the dependency rate, which is defined as number of dependents (individuals aged less than 15 or more than 64) as compared to the number of working age members (aged between 15 and 64 years old). It ranges from zero to four, with an average of 0.49.

As shown in Table 1.4, more than 80% of the heads of households are males. In about half of the cases, they had not attained any school diploma. Approximately 25% of household heads completed primary school, and about 17% completed college. Just a small percentage of household heads had earned a university diploma (see Table 1.5).

To initially assess the households’ living standards, we analyzed some characteristics of their dwellings. The questionnaire contained a section with questions addressed to heads of the household about the conditions of their dwellings.

Concerning the type of kitchen, almost 42% of the kitchens were identified as being indoors by the heads of households; another 42% were described as outdoor kitchens, while almost 15% of the sample households do not have a kitchen in their dwellings (Table 1.6).

Table 1.7 shows that almost half of the sample households use a wood latrine platform; just a small percentage of them have a toilet seat or a squat toilet, while more than 30% of the households surveyed do not have any type of toilet at their disposal.

Concerning the water sources in the rainy season, 32% households are compelled to use water obtained from a river, lake or spring. A public tap is the source of water used by 28% of the households, followed by water from a well (without a pump), used by around 20% of the households. Less than 10% of the households have either an indoor or outdoor private tap (Table 1.8).

Table 1.9 shows that around 60% of the households use wood as the main source of fuel, while 37% use charcoal.

Table 1.10 provides information on the number of rooms in the dwelling, not including toilet and kitchen. Thirty-seven percent of the households have only single-room dwellings, and about 34% of the households live in 2-rooms dwellings. The number of rooms in a dwelling, divided by the number of persons living in the household, is a measure of the crowded conditions in which the residents live: the average in our sample is 0.56.

Tables

Table 1.1 Household type

	All	
	N	Percent
Original household	697	44.82
New household	858	55.18
Total	1,555	100.00

Table 1.2 Household size

	All	
	N	Percent
1	112	7.20
2	196	12.60
3	339	21.80
4	245	15.76
5	171	11.00
6	125	8.04
7	117	7.52
8	91	5.85
More than 8	159	10.23
Total	1,555	100.00

Table 1.3 Dependency rate

	All	
	N	Percent
0	447	28.75
0 < dep ≤ 0.5	630	40.51
0.5 < dep ≤1	372	23.92
More than 1	106	6.82
Total	1,555	100.00

Table 1.4 Gender of household head

	All	
	N	Percent
Male	1,284	82.57
Female	271	17.43
Total	1,555	100.00

Table 1.5 Education of household head (highest diploma attained)

	All	
	N	Percent
No diploma	750	48.23
CEPE (Completed primary school)	374	24.05
BEPC (Completed college)	259	16.66
BAC (Completed high school)	92	5.92
DEIG/BAC+2 (2nd year University)	30	1.93
LICENCE/BAC+3 (3rd year University)	32	2.06
MAITRISE/BAC+4 (4th year University)	7	0.45
DEA/BAC+5 (5th year University)	5	0.32
PhD	3	0.19
Other	3	0.19
Total	1,555	100.00

Table 1.6 Type of kitchen

	All	
	N	Percent
Indoor kitchen	653	41.99
Outdoor kitchen	666	42.83
No kitchen	229	14.73
No information	7	0.45
Total	1,555	100.00

Table 1.7 Kind of toilet

	All	
	N	Percent
Toilet seat	33	2.12
Squat toilet	27	1.74
Latrine platform, concrete	86	5.53
Latrine platform, wood	719	46.24
Open hole	158	10.16
None (nature)	522	33.57
Others	2	0.13
No information	10	0.51
Total	1,555	100.00

Table 1.8 Water source, rainy season

	All	
	N	Percent
Indoor tap	75	4.32
Public tap	432	27.78
Private outdoor tap	65	4.18
River, lake or spring	502	32.28
Well without pump, covered	184	11.83
Well without pump, not covered	154	9.90
Well pump	65	4.18
Rain water	67	4.31
Water seller	1	0.06
No information	10	0.64
Total	1,555	100.00

Table 1.9 Kind of fuel

	All	
	N	Percent
Wood	929	59.74
Charcoal	575	36.98
Gas	2	0.13
Electricity	20	1.29
Oil	1	0.06
No information	28	1.80
Total	1,555	100.00

Table 1.10 Number of rooms in dwelling (without kitchen and toilet)

	All	
	N	Percent
1	581	37.36
2	536	34.47
3	176	11.32
4	167	10.74
5	90	5.79
No information	5	0.32
Total	1,555	100.00

2. Cohort member basic characteristics

This section provides basic information on cohort members. Half of the cohort members live in the same household they lived in 2004, and half live in a new household (Table 2.1).

The sample of cohort members is almost equally split between men and women, with a slight prevalence of women, which represent 52.32% (Table 2.2). The average age of cohort members is 22 years old, and the average is the same for males and females (Table 2.3).

Table 2.4 shows that 22% of the cohort members are heads of their households, and the percentage is far higher for males (34.9%) than for females (9.98%). Conversely, only a small percentage of males in the survey are spouses of females identified as household head (0.74%), while the majority of females are in this relationship with the head of the household (40.58%). Most of the cohort members are children of the household head—almost half of the men and around 38% of the women.

Table 2.5 shows the ethnicity of the cohort members; we reported only the ethnicities that included more than 3% of the cohort members. The largest and most dominant of the groups is the Merina people; the second and third largest groups are the Betsileo and the Betsimisaraka, respectively.

Concerning marital status, almost 36% of the cohort members are married, and the percentage is far larger for women rather than for men (44% vs. 28%). There is quite a wide variability in the duration of the marriage (Table 2.7): most of the marriages have been contracted one or two years before the survey, but approximately 46% of cohort members have been married for more than four years, and the percentage is higher for women (54.71%) in marriages of longer duration.

Table 2.8 and Table 2.10 show that around 43% of cohort members live with their mothers, and around 36% live with their father. Both of these groups are more largely populated by males, and this probably reflects the higher number of women who left their own households when they married.

About 15% of the mothers and 24% of the fathers of cohort members are dead. Again we observe a difference between men and women, with the data showing that men's parents are more likely to have died (Tables 2.9 and 2.11). There was also a small percentage of cohort members who declared that they did not know if their parents were still alive.

Tables

Table 2.1 Household type

	All	
	N	Percent
Original household	835	48.97
Old household	870	51.03
Total	1,705	100.00

Table 2.2 Gender

	All	
	N	Percent
Male	813	47.68
Female	892	52.32
Total	1,705	100.00

Table 2.3 Age

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
14	1	0.06	0	0.00	1	0.11
15	2	0.12	1	0.12	1	0.11
17	3	0.18	2	0.25	1	0.11
18	2	0.12	1	0.12	1	0.11
19	32	1.88	10	1.23	22	2.47
20	101	5.92	46	5.66	55	6.17
21	517	30.32	260	31.98	257	28.81
22	478	28.04	209	25.71	269	30.16
23	402	23.58	199	24.48	203	22.76
24	125	7.33	57	7.01	68	7.62
25	35	2.05	22	2.71	13	1.46
26	5	0.29	4	0.49	1	0.11
27	2	0.12	2	0.25	0	0.00
Total	1,705	100.00	813	100.00	892	100.00

Table 2.4 Relationship to the household head

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
1. Household head	373	21.88	284	34.93	89	9.98
2. Spouse	368	21.58	6	0.74	362	40.58
3. Child	740	43.40	399	49.08	341	38.23
4. Adopted child	12	0.70	9	1.11	3	0.34
5. Grandson or granddaughter	46	2.70	26	3.20	20	2.24
6. Nephew or Niece	49	2.87	27	3.32	22	2.47
8. Brother or Sister	40	2.35	17	2.09	23	2.58
9. Son or Daughter-in-law	4	0.23	2	0.25	2	0.22
10. Brother- or Sister-in-law	14	0.82	7	0.86	7	0.78
12. Father- or Mother-in-Law	2	0.12	1	0.12	1	0.11
13. Cousin	9	0.53	4	0.49	5	0.56
14. Other relative	1	0.06	0	0.00	1	0.11
15. Adopted child	7	0.41	7	0.86	0	0.00
16. No relationship	6	0.35	4	0.49	2	0.22
No information	34	1.99	20	2.46	14	1.57
Total	1,705	100.00	813	100.00	892	100.00

Table 2.5 Ethnicity

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
Antandroy	105	6.16	54	6.64	51	5.72
Antesaka	65	3.81	31	3.81	34	3.81
Betsileo	330	19.35	150	18.45	180	20.18
Betsimisaraka	199	11.67	92	11.32	107	12.00
Merina	430	25.22	225	27.68	205	22.98
Sakalava	103	6.04	46	5.66	57	6.39
Sihanaka	74	4.34	38	4.67	36	4.04
Tanala	60	3.52	26	3.20	34	3.81
Tsimihety	128	7.51	68	8.36	60	6.73
Others	211	12.38	83	10.21	128	14.35
Total	1,705	100.00	813	100.00	892	100.00

Table 2.6 Marital status

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
Married	622	36.48	229	28.17	393	44.06
Single	1,083	63.52	584	71.83	499	55.94
Total	1,705	100.00	813	100.00	892	100.00

Table 2.7 Marriage duration, years

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
0	2	0.32	1	0.44	1	0.25
1	110	17.68	54	23.58	56	14.25
2	122	19.61	65	28.38	57	14.50
3	95	15.27	32	13.97	63	16.03
4	94	15.11	36	15.97	58	14.76
5	66	10.61	15	6.55	51	12.98
6	73	11.74	14	6.11	59	15.01
7	35	5.63	5	2.18	30	7.63
8 and more	23	3.71	6	2.62	17	4.33
No information	2	0.32	1	0.44	1	0.25
Total	622	100.00	229	100.00	393	100.00

Table 2.8 Mother living in the same household

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
Yes	729	42.76	383	47.11	346	38.79
No	969	56.83	426	52.40	543	60.87
No information	7	0.41	4	0.49	3	0.34
Total	1,705	100.00	813	100.00	892	100.00

Table 2.9 Mother died

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
Yes	145	14.95	82	19.25	63	11.60
No	824	85.05	344	80.75	480	88.40
Total	969	100.00	426	100.00	543	100.00

Table 2.10 Father living in the same household

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
Yes	612	35.89	335	41.21	277	31.05
No	1,087	63.75	475	58.43	612	68.61
No information	6	0.35	3	0.37	3	0.34
Total	1,705	100.00	813	100.00	892	100.00

Table 2.11 Father died

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
Yes	258	23.74	123	25.89	135	22.06
No	793	72.95	339	71.37	454	74.18
Don't know	26	2.39	8	1.68	18	2.94
No information	10	0.92	5	1.06	5	0.82
Total	1,087	100.00	475	100.00	612	100.00

3. Education

The transition from adolescence to adulthood is a crucial period for education.[1] This is the time when cohort members decide (or their parents make the decision for them) to drop out school, and as a consequence, to end their education. Table 3.1 presents this transition: in 2004, in the previous survey, 79% of the cohort members in our sample were enrolled in school while only 19% were attending school in 2011. Enrolment rate decreases with age: in 2004, 90% of 13-year old cohort members were enrolled while only 65% of 16-year olds were in school; in 2011, 20% of the 20-year old cohort members were enrolled while only 14% of the 24-year old cohort members were. The enrolment rate is significantly higher among those living in richer households: in 2004, only 6% of the cohort members living in one of the 25% poorest households of the sample were enrolled in 2011 while nearly one-third of the cohort from highest quartile of assets index were in school. Parent's education is also associated with a higher enrolment rate. Nearly one-half of the cohort members, with fathers who completed higher secondary school, was still enrolled in 2011. Table 3.2 shows enrollment rate by gender for each considered age. On average, girls were slightly less likely to be enrolled in 2004 but there were no significant difference in 2011.

Tables 3.3 and 3.4 present information concerning the last school attended and the highest grade attained in 2011. Thirty-five percent of male cohort members and 38% of female have not

[1] The Malagasy school system consists of a primary cycle and a secondary cycle composed of two phases. The primary school starts at the age of 6. Some schools offer a pre-scholar education. The primary cycle, which lasts 5 years (CP1, CP2, CE, CM1, CM2), ends with an exam at the end of the last year and a CEPE (Primary Education Completion Certificate) is acquired after succeeding to that exam. The first phase of the secondary education (lower secondary school) lasts 4 years and ends with the BEPC (Basic Secondary Education Completion Certificate). The second phase of the secondary education (High School), to last for 3 years, ends with the High School Diploma.

been enrolled beyond primary school. Nearly 35% of the cohort have attended higher secondary school and above. Only 9% have continued schooling after secondary school.

Table 3.5 shows the average grade attained in 2004 and in 2011, as well as the average grade progression between the two surveys. In 2004, cohort members had reached an average of 5.19 years of schooling. In 2011, the average years of schooling attained were 7.74, and the average grade progression was 2.6 years. Interestingly, girls' and boys' performances show an opposite pattern in the two surveys. Girls performed significantly better in 2004, while boys had reached a higher grade by 2011. Grade progression is significantly higher for boys. Parents' education and household wealth are associated with better grade attainment in 2004 and in 2011 and with greater grade progression. This result suggests that differences in school achievement observed in 2004 have increased in the intervening years between the surveys. It is worth noting that the gradient in grade attainment by parents' education or household wealth is large: grade attainment is more than twice as high for households in the wealthiest quartile of the distribution that in the poorest quintile.Table 3.6

Reasons for dropping out school are presented in Tables 3.7, 3.8, and 3.9. The inability to pay for school is the main reason given by cohort members for dropping out, no matter what the last grade attained. This reason is given by 43% of the cohort. The second most frequently offered reason is related to housework (including assisting other households' members) and is given by 20% of the cohort members. This reason is more prevalent in poorer households (32% for households in the poorest quartile) than in richer ones (14%). The third most often provided reason is the completion of an academic cycle (17%), suggesting that the diploma associated with the end of the cycle is a clear target for cohort members. Similarly, failing the entrance exam to the next cycle is given as a reason for dropping out by one-quarter of the cohort members who were last enrolled in higher secondary school. There is also only a small share of cohort members enrolled in college (9%). Finally, having a bad opinion of education is the reason given by 16% of cohort members. This reason is more prevalent amongst cohort members who have attended only primary school (22%), suggesting those with negative opinions regarding education left school early.

Tables

Table 3.1 Enrolment rate by age, asset index, and parent's education

	N	Enrolled in 2003 Percent	Enrolled in 2011 Percent
Total	1681	0.79	0.19
Age in 2004			
12	36	0.92	0.25
13	158	0.90	0.30
14	577	0.87	0.21
15	479	0.77	0.16
16	345	0.65	0.13
17	27	0.33	0.14
Quartile of asset index in 2004			
1	350	0.64	0.06
2	398	0.75	0.11
3	457	0.80	0.18
4	473	0.91	0.34
Father's education			
None	208	0.68	0.08
Some primary	586	0.73	0.11
Completed primary	232	0.76	0.12
Some lower secondary	171	0.83	0.20
Completed lower secondary	197	0.87	0.25
Some higher secondary	112	0.94	0.29
Completed higher secondary	114	0.95	0.50
Above secondary	53	0.94	0.45
Mother's education			
None	274	0.71	0.07
Some primary	583	0.72	0.13
Completed primary	267	0.77	0.19
Some lower secondary	207	0.89	0.22
Completed lower secondary	169	0.88	0.25
Some higher secondary	80	0.95	0.34
Completed higher secondary	65	1.00	0.52
Above secondary	23	1.00	0.70

Table 3.2 Enrolment rate by gender and age in 2004

Age in 2004	Male			Female		
	N	Enrolled in 2004	Enrolled in 2011	N	Enrolled in 2004	Enrolled in 2011
12	14	0.93	0.21	22	0.91	0.27
13	66	0.95	0.30	92	0.87	0.29
14	287	0.88	0.22	290	0.86	0.19
15	228	0.82	0.16	251	0.74	0.16
16	168	0.65	0.12	177	0.64	0.14
17	12	0.42	0.17	15	0.27	0.12
Total	775	0.81	0.19	847	0.77	0.18

Table 3.3 Highest school attended by gender

	Male		Female	
	N	Percent	N	Percent
Primary school	279	0.35	329	0.38
Lower secondary	221	0.28	260	0.30
Higher secondary	233	0.29	197	0.23
Above secondary	65	0.08	88	0.10
Total	798	1.00	874	1.00

Table 3.4 Highest grade attained by gender

	Male		Female	
	N	Percent	N	Percent
No grade	15	0.02	18	0.02
CP1/T1	15	0.02	14	0.02
CP2/T2	24	0.03	35	0.04
CE/T3	63	0.08	72	0.08
CM1/T4	72	0.09	77	0.09
CM2/T5	105	0.13	131	0.15
6th	37	0.05	39	0.04
5th	32	0.04	50	0.06
4th	55	0.07	46	0.05
3rd	97	0.12	125	0.14
2nd	35	0.04	36	0.04
1st	53	0.07	41	0.05
Terminale	145	0.18	120	0.13
BAC+1	35	0.04	40	0.04
BAC+2	17	0.02	31	0.03
BAC+3	7	0.01	11	0.01
BAC+4	5	0.01	5	0.01
BAC+5 or more	1	0.00	1	0.00
Total	813	1.00	892	1.00

Table 3.5 Grade in 2004, grade in 2011 and grade progression

	Grade in 2004 Number of years	**Grade in 2011** Number of years	**Grade progression** Number of years
Total	5.19	7.74	2.60
Male	5.07	7.89	2.85
Female	5.28	7.64	2.38
Rural	4.81	7.10	2.33
Urban	6.24	9.67	3.42
Quartile of asset index in 2003			
1	3.33	4.74	1.49
2	4.65	6.76	2.14
3	5.56	8.21	2.68
4	6.65	10.44	3.77
Remoteness index			
1	6.13	9.24	3.12
2	5.70	8.53	2.82
3	4.76	6.83	2.12
4	4.63	7.00	2.44
5	3.83	5.07	1.31
Father's education			
None	3.63	5.31	1.77
Some primary	4.44	6.38	1.98
Completed primary	5.12	7.37	2.26
Some lower secondary	5.78	8.49	2.74
Completed lower secondary	6.18	9.64	3.50
Some higher secondary	6.49	10.00	3.52
Completed higher secondary	7.29	11.80	4.42
Above secondary	6.89	11.85	4.89
Mother's education			
None	3.44	5.20	1.84
Some primary	4.75	6.80	2.09
Completed primary	5.24	7.65	2.44
Some lower secondary	6.03	9.15	3.14
Completed lower secondary	6.46	9.98	3.53
Some higher secondary	6.67	10.59	3.90
Completed higher secondary	7.32	12.14	4.78
Above secondary	8.04	13.35	5.04

Table 3.6 Grade attainment and grade progression by grade in 2004

Grade in 2003	**Grade in 2011** Number of years	**Grade progression since 2004** Number of years
0	2.18	2.18
1	3.02	2.07
2	3.64	1.69
3	4.35	1.42
4	5.76	1.85
5	7.28	2.33
6	9.40	3.43
7	10.80	3.80
8	11.22	3.23
9	11.85	2.85
10 and more	13.50	2.78

Table 3.7 Reasons for dropping out school, by gender (percent)

	Male	**Female**	**Total**
Illness / accident	0.04	0.05	0.05
Pregnancy	0.00	0.13	0.07
Cannot pay for school	0.47	0.40	0.43
Housework	0.11	0.08	0.09
Assist household's members	0.10	0.11	0.11
Involved in family business	0.05	0.01	0.03
Academic cycle completed	0.20	0.15	0.17
Bad opinion on education	0.15	0.16	0.16
Sexual harassment	0.00	0.01	0.01
Family moved	0.00	0.01	0.01
Failed at the exam	0.08	0.05	0.06
No more places open at school	0.01	0.01	0.01
Next school too distant	0.02	0.02	0.02
Number of observations	528	581	1109

Table 3.8 Reasons for dropping out school, by type of last school attended (percent)

	Dropped out at		
	primary school	**lower secondary**	**higher secondary**
Illness / accident	0.04	0.05	0.06
Pregnancy	0.04	0.10	0.08
Cannot pay for school	0.42	0.46	0.43
Housework	0.15	0.07	0.02
Assist household's members	0.12	0.13	0.06
Involved in family business	0.04	0.02	0.01
Academic cycle completed	0.17	0.19	0.15
Bad opinion on education	0.22	0.14	0.04
Sexual harassment	0.00	0.01	0.00
Family moved	0.01	0.01	0.01
Failed at the exam	0.00	0.01	0.26
No more places open at school	0.01	0.00	0.03
Next school too distant	0.01	0.01	0.05
Number of observations	512	318	261

Table 3.9 Reasons for dropping out school, by asset index quartile (percent)

	Quartile of asset index			
	1	**2**	**3**	**4**
Illness / accident	0.02	0.03	0.05	0.09
Pregnancy	0.05	0.07	0.06	0.10
Cannot pay for school	0.41	0.43	0.50	0.37
Housework	0.17	0.12	0.03	0.06
Assist household's members	0.14	0.11	0.09	0.08
Involved in family business	0.04	0.04	0.02	0.02
Academic cycle completed	0.15	0.18	0.16	0.21
Bad opinion on education	0.24	0.18	0.12	0.08
Sexual harassment	0.00	0.00	0.01	0.01
Family moved	0.01	0.00	0.01	0.01
Failed at the exam	0.00	0.04	0.10	0.13
No more places open at school	0.00	0.00	0.02	0.01
Next school too distant	0.00	0.03	0.01	0.03
Number of observations	283	281	303	241

4. Test scores

Test scores provide an accurate evaluation of an individual knowledge. During the 2003/4 survey, cohort members were given tests in mathematics, French, and life skills. Math and French tests included oral and written parts. Tests were the same for every cohort member, no matter what the final grade they had attained. Scores are normalized from 0 to 1 (a score of 1 means that all answers were correct). Table 4.1 presents the correlation the various tests scores and grade

attainment. The five scores (oral and written math test scores, oral and written French test scores, and life skills test score) are strongly correlated with each other. Not surprisingly, they are also positively and highly correlated with grade, suggesting grade attainment is a major predictor not only for academic knowledge but also for life skills. Table 4.2 presents average score by grade in 2004. Not surprisingly, cohort members enrolled at higher grades in 2004 performed better in the 2011 tests.

Table 4.3 presents average scores by gender, parent's education, and household characteristics. For the whole sample, male cohort members performed slightly better than females, but the difference is only significant for math tests and may only be the consequence of a better mean grade attainment for males. Parent's education is strongly associated with better scores: for instance, cohort members whose fathers has no education performed 0.27 on the written French test, while cohort members whose fathers had completed higher secondary performed 0.70. Members from wealthier households and less remote areas also received better scores. These results are not surprising if we consider them in the context of the distribution of grade attainment by quartile of asset index and by remoteness index (see Education Section 3).

In 2004, in the previous survey, cohort members were also given oral and written tests in math, French, and life skills. Previous scores are only available for 824 to 980 cohort members, depending of the kind of test. Table 4.4 presents the correlation between 2004 tests scores and the 2011 test scores. Correlations are strong, positive, and highly significant. Cohort members who performed better in the previous survey also received better scores in 2011. This result is confirmed by Tables 4.5, 4.6, and 4.7, which present average scores for the 2011 test by quintile of the scores from the previous survey. Male cohort members from the lowest 2004 French score quintile scored 0.30, while those from the highest quintile scored 0.68. There is no significant difference by gender. However, there is a large difference in knowledge acquisition between cohort members from rural and urban areas . Although there is no difference in math scores for members of the lowest quintiles (0.29 and 0.30), cohort members from urban areas scored 0.60 on average, as compared to the average rural areas of only 0.50.

Tables

TABLE 4.1 Correlation between tests scores and final grade attained

	2011 Test scores					
	Grade in 2011	**Oral math**	**Written math**	**Oral French**	**Written French**	**Life skills**
Grade in 2011	1.0					
N	1705					
Oral math	0.6882*	1.0				
N	1550	1550				
Written math	0.6934*	0.7810*	1.0			
N	1557	1550	1557			
Oral French	0.7142*	0.6815*	0.6971*	1.0		
N	1534	1523	1530	1534		
Written French	0.7573*	0.7357*	0.7882*	0.7948*	1.0	
N	1532	1523	1529	1528	1532	
Life skills	0.5442*	0.5686*	0.5795*	0.5066*	0.5483*	1.0
N	1635	1543	1550	1528	1526	1635

Table 4.2 Average scores for 2011 tests by grade level in 2004.

Grade in 2004	**Oral math**	**Written math**	**Oral French**	**Written French**	**Life skills**
0	0.15	0.13	0.13	0.11	0.38
1	0.27	0.18	0.16	0.12	0.38
2	0.21	0.16	0.20	0.16	0.39
3	0.26	0.19	0.23	0.20	0.40
4	0.36	0.29	0.37	0.30	0.45
5	0.48	0.36	0.45	0.40	0.49
6	0.58	0.44	0.63	0.52	0.53
7	0.69	0.51	0.71	0.61	0.55
8	0.71	0.53	0.78	0.65	0.55
9	0.74	0.54	0.81	0.69	0.59
10 and more	0.84	0.60	0.92	0.78	0.61

Table 4.3 Average scores for the 2011 tests by gender, parent's education and household characterictics

	Oral math	Written math	Oral French	Written French	Life skills
Total	0.51	0.38	0.52	0.44	0.49
Male	0.52	0.39	0.52	0.45	0.50
Female	0.49	0.37	0.52	0.43	0.49
Rural	0.47	0.35	0.47	0.39	0.47
Urban	0.62	0.45	0.67	0.57	0.54
Quartile of asset index					
1	0.30	0.23	0.27	0.22	0.41
2	0.43	0.32	0.42	0.34	0.47
3	0.55	0.41	0.57	0.47	0.51
4	0.67	0.50	0.72	0.63	0.55
Remoteness index					
1	0.60	0.44	0.64	0.54	0.54
2	0.58	0.42	0.55	0.49	0.52
3	0.38	0.31	0.43	0.35	0.44
4	0.47	0.35	0.47	0.39	0.46
5	0.28	0.22	0.23	0.19	0.42
Father's education					
None	0.35	0.26	0.31	0.27	0.42
Some primary	0.42	0.31	0.40	0.34	0.46
Completed primary	0.48	0.37	0.50	0.42	0.49
Some lower secondary	0.53	0.41	0.57	0.50	0.51
Completed lower secondary	0.65	0.47	0.68	0.55	0.53
Some higher secondary	0.66	0.47	0.70	0.60	0.55
Completed higher secondary	0.71	0.55	0.82	0.72	0.57
Above secondary	0.73	0.54	0.81	0.70	0.59
Mother's education					
None	0.33	0.24	0.29	0.26	0.43
Some primary	0.44	0.33	0.44	0.38	0.47
Completed primary	0.51	0.38	0.52	0.43	0.50
Some lower secondary	0.60	0.45	0.63	0.52	0.52
Completed lower secondary	0.66	0.48	0.72	0.59	0.55
Some higher secondary	0.65	0.49	0.71	0.59	0.55
Completed higher secondary	0.79	0.59	0.81	0.76	0.58
Above secondary	0.85	0.65	0.90	0.84	0.59

Table 4.4 Correlation between 2004 and 2011 tests scores

	2004 test scores			2011 test scores				
	Math 2004	**French 2004**	**Life skills 2004**	**Oral math**	**Written math**	**Oral French**	**Written French**	**Life skills**
Math 2004	1.0							
N	824							
French 2004	0.6624*	1.0						
N	813	923						
Life skills 2004	0.6266*	0.5267*	1.0					
N	820	913	980					
Oral math	0.4727*	0.3944*	0.3697*	1.0				
N	767	849	889	1550				
Written math	0.4718*	0.4007*	0.3783*	0.7810*	1.0			
N	773	855	895	1550	1557			
Oral French	0.4598*	0.4280*	0.3646*	0.6815*	0.6971*	1.0		
N	762	843	882	1523	1530	1534		
Written French	0.5171*	0.4867*	0.3953*	0.7357*	0.7882*	0.7948*	1.0	
N	758	839	878	1523	1529	1528	1532	
Life skills	0.4424*	0.3826*	0.3876*	0.5686*	0.5795*	0.5066*	0.5483*	1.0
N	794	889	939	1543	1550	1528	1526	1635

Table 4.5 Average 2011 math test score by quintile of the 2004 math test score

	2011 math test score			
2004 Math test score	**Male**	**Female**	**Rural**	**Urban**
Lowest quintile	0.31	0.28	0.29	0.30
Second quintile	0.39	0.33	0.36	0.35
Third Quintile	0.45	0.44	0.46	0.39
Fourth quintile	0.56	0.48	0.52	0.51
Highest quintile	0.59	0.52	0.50	0.60

Table 4.6 Average 2011 French test score by quintile of the 2004 French test score

2004 French test score	2011 French test score			
	Male	**Female**	**Rural**	**Urban**
Lowest quintile	0.30	0.26	0.27	0.35
Second quintile	0.41	0.35	0.39	0.33
Third Quintile	0.48	0.49	0.50	0.44
Fourth quintile	0.60	0.57	0.56	0.63
Highest quintile	0.68	0.68	0.56	0.79

Table 4.7 Average 2011 life skills test score by quintile of the 2004 life skills test score

2004 Life skills test score	2011 life skills test score			
	Male	**Female**	**Rural**	**Urban**
Lowest quintile	0.44	0.40	0.41	0.48
Second quintile	0.51	0.47	0.49	0.53
Third Quintile	0.50	0.52	0.50	0.53
Fourth quintile	0.54	0.53	0.53	0.55
Highest quintile	0.56	0.55	0.54	0.56

5. Employment and Earnings

Employment statistics are reported in Table 5.1. Employment in the sample is high with 76% of the sample working, 14% attending school, and only 6% are neither working or in school. Unemployment is higher among females than among males, with gender-specific unemployment rates of 8.56% and 3.27%, respectively. Roughly 14% of both males and females are still in school, and 80% of males and 74.33% of females are working. As can be seen in Table 5.2, at 74%, females make up a larger share of the unemployed. However the sample of those employed and students are largely equal in shares of males and females. Fifty percent of those working are males; 47% of the students in the sample are male.

Table 5.3 reports the average grade attainment in each employment category, and Figure 5.1 shows the educational distribution of individuals in each category. As would be expected, grade attainment is highest for those who are still students, with an average grade attainment of 12.10 (12.71 for males and 11.76 for females). Most current students have completed secondary school (at 34.15%), and an even larger (39.02%) share is currently in university. Grade attainment is lowest for those currently employed, with an average grade attainment of 6.83 (7.02 for males and 6.68 for females). Although the largest share of workers (28.11%) has only completed some primary school, the distribution is wide with a significant portion of workers having completed at least some middle (college) and some secondary school. Average grade attainment for those individuals who are neither working nor students is fairly high at 9.31 (10.81 for males and 8.73 for females). Looking at the distribution of educational status among the unemployed, there appears to be some queuing for better jobs, with the largest share (30.84%) having completed secondary school.

Table 5.4 describes the breakdown across occupational categories among those individuals in the sample who are working. Half of all workers (44.48% of working males and 57.7% of working females) are employed in a family enterprise or are doing domestic work in another household not their own. Thirty percent of workers (31.91% of males and 33.75% of females) are self-employed, and 16.58% (21.77% of males and 11.79% of females) are working in the public or private sector. Looking at the breakdown of main occupations across industrial sectors in Table 5.5, we see that 71% of workers who are self-employed and 79% of those who are in a family enterprise or domestic work are working in the agricultural sector. Those who report working in the public or private sector are primarily working in a high skill occupation or a low skill/manual labor occupation.

Not surprisingly, those employed in the public and private sector have the highest grade attainment with an average grade attainment of 9.72, as reported in Table 5.6. Females in the private/public sector have a statistically significantly higher grade attainment of 10.48 than males whose average grade attainment is 9.32. However, females in family enterprises and domestic work have statically significantly less education than their male counterparts, with average grade attainments of 6.54 and 7.03, respectively. Grade attainment for the self-employed is the lowest with average grade attainment of 5.65 (5.58 for males and 5.69 for females). The educational distribution across occupational categories can be seen in Figure 5.2.

Table 5.7 and Figure 5.3 describe individual earnings by main occupational category. In the full sample, individuals working in the private or public sector have the highest earnings while those in family and domestic work have the lowest average earnings. However, when looking at gender-specific earnings, self-employed males actually have the highest earnings while females in the public or private sector have the highest average earnings.

Tables

Table 5.1 Distribution of employment status

	All		**Males**		**Females**	
	N	Percent	N	Percent	N	Percent
Unemployed	108	6.07	27	3.27	77	8.56
Working	1,354	76.07	661	80.12	669	74.33
Student	249	13.99	112	13.58	127	14.11
Missing	69	3.88	25	3.03	27	3

Table 5.2 Gender make-up of employment categories

	Male	**Female**	**Difference**
	Mean	Mean	
Unemployed	0.2596	0.7404	**0.2331**
Working	0.4970	0.5030	**-0.0917**
Student	0.4686	0.5314	0.0112

Table 5.3 Highest grade attained by employment status

	All			Males			Females			Difference
	N	Mean	SD	N	Mean	SD	N	Mean	SD	(Female-Male)
Unemployed	107.00	9.31	3.21	26.00	10.81	2.79	77.00	8.73	3.19	**-2.08**
Working	1327.00	6.83	3.52	653.00	7.02	3.61	654.00	6.68	3.44	**-0.34**
Student	247.00	12.10	5.71	110.00	12.71	7.63	127.00	11.76	3.38	-0.95
Total	1681.00	7.77	4.34	789.00	7.94	4.82	858.00	7.61	3.86	-0.31

Table 5.4 Main occupation of those currently working

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
Public/Private Sector	214	16.58	138	21.77	75	11.79
Self-Employed	412	31.91	214	33.75	194	30.5
Family Enterprise/ Domestic Work	665	51.51	282	44.48	367	57.7

Table 5.5 Main occupation across industrial sectors

	Public/ Private Sector	Self-Employed	Family Enterprise/ Domestic	Total
Agriculture/ Livestock	6	291	522	819
Manual Labor/ Low Skill	78	49	71	198
Service	33	68	63	164
High Skill	95	3	7	105
Total	212	411	663	1,286

Table 5.6 Highest grade attained by main occupational category

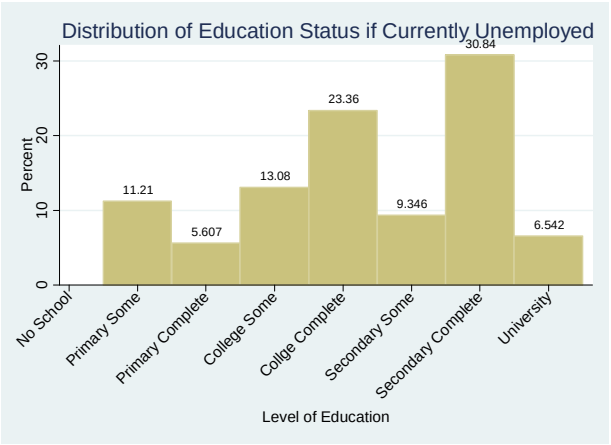
	All			Males			Females			Difference
	N	Mean	SD	N	Mean	SD	N	Mean	SD	(Female-Male)
Public/Private Sector	209.00	9.72	3.07	136.00	9.32	3.05	73.00	10.48	2.99	**1.16*****
Self-Employed	406.00	5.65	3.15	211.00	5.58	3.32	191.00	5.69	2.98	0.11
Famliy Enterprise/ Domestic Work	650.00	6.74	3.38	279.00	7.03	3.52	358.00	6.54	3.26	**-0.49***

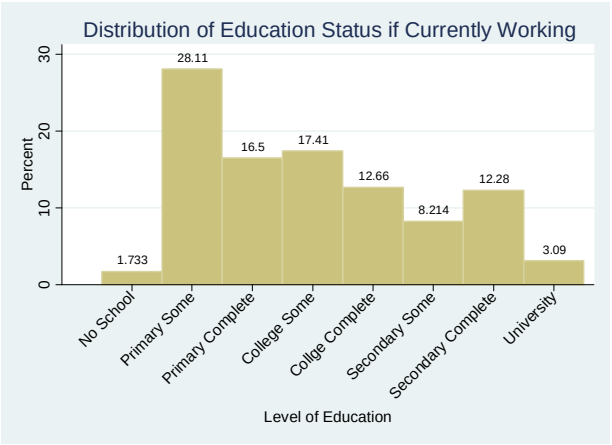
Table 5.7 Earnings by main occupational category (1,000 Ariary)

	All				Males				Females				Difference
	N	Mean	Median	SD	N	Mean	Median	SD	N	Mean	Median	SD	(Female-Male)
Public/Private Sector	212	193.27	1040	445.65	138	207.69	1200	456.78	73	168.64	800	428.33	-39.05
Self-Employed	409	180.27	330	848.10	213	222.43	384	106.33	192	137.22	178	52.64	-85.22
Family Enterprise/ Domestic Work	659	82.55	0	459.69	282	120.22	0	639.35	362	52.64	0	250.08	**-67.58**
Total	1280	132.11	100	611.19	633	173.69	320	780.09	627	92.05	0	379.35	**-81.64**

Note: Earnings are reported in Ariary. 1,000 Ariary is 0.45 US$ (7 November 2013)

Figures—Employment and Earnings





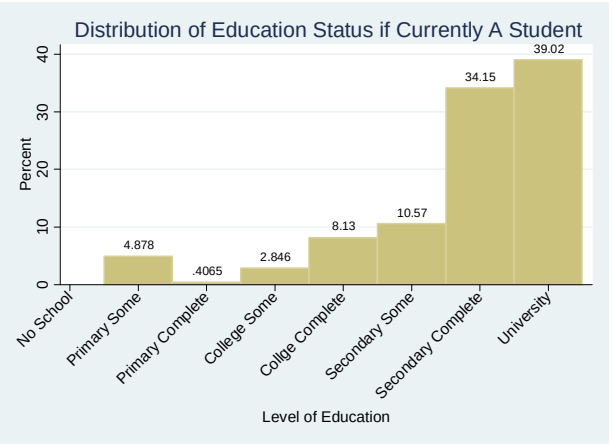
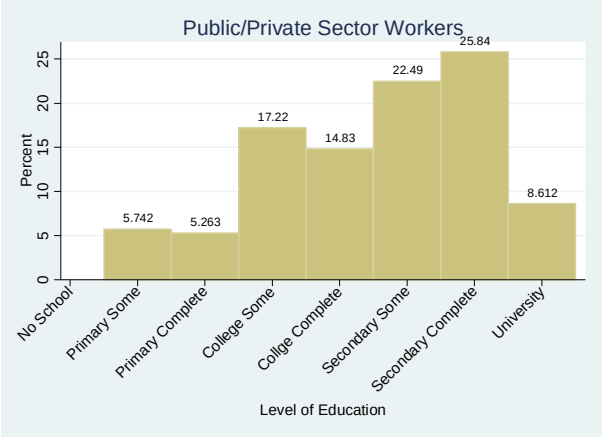
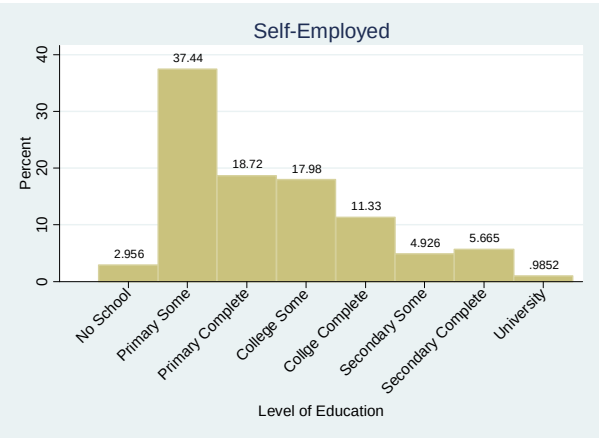


Fig. 5.1 Distribution of educational attainment by Employment status





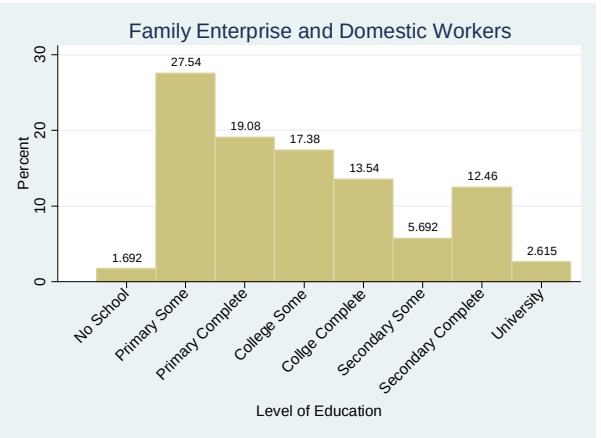
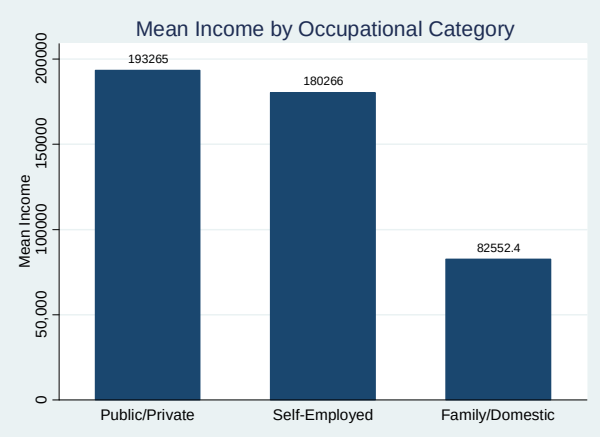
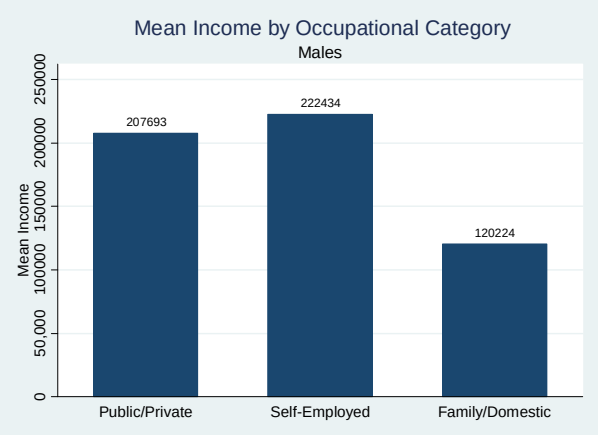


Fig. 5.2 Distribution of educational attainment by occupational category





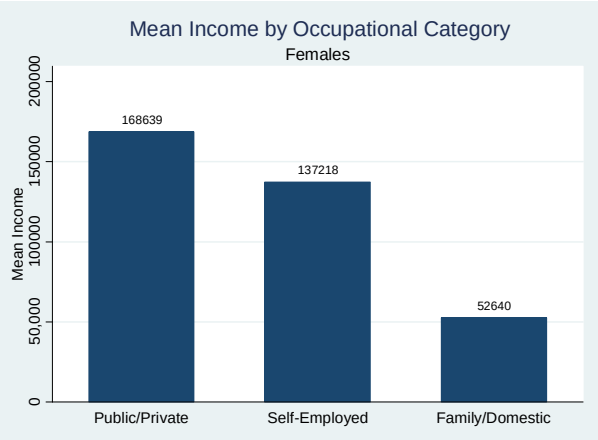


Fig.5.3 Earnings by main occupational category

6. Health

Smoking

In our sample, 200 cohort members are currently smoking, or 12% of the sample. Smokers are mainly men (96.5%), with women representing only 3.5% of smokers. One quarter of men are currently smoking, but the vast majority of women are not (Table 6.1).

The vast majority of smokers smoke between one and five cigarettes per day in the entire sample (65%); the gender difference is males (65.80%) and females (42.86%). For females, it should be noted that the same proportion of them (42.86%) declared that they smoked between 6 and 10 cigarettes per day (Table 6.2).

In our sample, 39% have a family member who smoked during their childhood, most often identified as the father. Patterns between males and females are quite similar. Additionally, 56% of smokers reported a family member who smoked during their childhood while only 36% of non-smokers did. Again, it was mainly the fathers who smoked during the childhood of cohort members (Table 6.3).

Overall, smokers started smoking at 18 years old, with no significant statistical difference between males and females (Table 6.4).

The distribution of educational level with regard to smoking status shows that a higher proportion of highly educated cohort members ("Lycee" completed and University or DEUG and more) are non-smokers rather than smokers (Figure 6.1).

Alcohol consumption

In our sample, 253 cohort members report consuming alcohol, or 15% of the sample. Consumers are mainly men (90%). Twenty-eight percent of men consume alcohol, whereas the vast majority of women do not (Table 6.5).

On average, cohort members consume 9 beers per month and 16 glasses of alcohol. Patterns are quite different when considering women and men separately. Women consume more glasses of alcohol per month than men: 25 vs. 15. Men consume more beers than women: 9 vs. 5 (Table 6.6).

In our sample, 48% of cohort members have a family member who consumed alcohol during their childhood. This family member was most often identified as the father (37%). Patterns between males and females are quite similar. Also, 65% of alcohol consumers have a family member who consumed alcohol during their childhood, whereas only 45% of non-consumers did. Again, it was mainly the fathers who consumed alcohol during the childhoods of cohort members (Table 6.7).

Overall, current alcohol consumers started drinking alcohol at 18 years old, with no significant statistical differences between males and females (Table 6.8).

The distribution of education level with regard to alcohol consumption status shows that a higher proportion of highly educated cohort members ("Lycee" completed and University or DEUG and more) do not drink alcohol (Figure 6.2).

Disease

One hundred thirty-nine cohort members, or 8% of the sample, at the time of the survey, report suffering from disease. The patterns are quite similar among men and women: 8% of men and 9% of women report illness. Slightly more women than men report affliction at the time of the survey (78 women, or 56% vs. 61 men, or 44%) (Table 6.9).

Among cohort members who report that they are suffering from a disease at the time of the survey, the main type of disease reported (except for the category of "others") is diarrhea or digestive problems (17%). The conclusion is similar when considering males and females separately. Tuberculosis and breathing problems represent 11% of the disease declared. It is the second most frequent type of illness declared by men. In comparison, this illness category represents only 8% of diseases declared by women. Malaria represents 7% of the diseases declared by the sick cohort members, with a similar incidence observed between males and females (Table 6.10).

Nine percent of the sick cohort members have suffered from specified illness since their birth. Twenty-one percent report suffering for less than a year, 23% between 1 and 5 years, 29% between 5 and 10 years, and 13% for more than 10 years (but not since birth) (Table 6.11).

Additionally, 121 cohort members, or 7.10% of the sample, declared that, during the previous 10 years, they had one or more serious illnesses or injuries that prevented them from doing their usual activities for one month or more.

Tables

Table 6.1 Current smoking status

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
Yes	200	11.73	193	23.74	7	0.78
No	1505	88.27	620	76.26	885	99.22
Total	1705	100.00	813	100.00	892	100.00

Table 6.2 Tobacco consumption per day

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
1-5 cigarettes	130	65.00	127	65.80	3	42.86
6-10 cigarettes	56	28.00	53	27.46	3	42.86
Less than 1 pack	5	2.50	5	2.59	0	0.00
1 pack	7	3.50	6	3.11	1	14.29
1–2 packs	1	0.50	1	0.52	0	0
2 or more packs	1	0.50	1	0.52	0	0
Total	200	100.00	193	100.00	7	100.00

Table 6.3 Family smoking behavior during childhood

	All	
	N	Percent
All		
A family member smoked (N=1705)	657	38.53
Father smoked (N=1705)	440	25.81
Mother smoked (N=1705)	33	1.94
Others family members smoked (1705)	346	20.29
Males		
A family member smoked (N=813)	331	40.71
Father smoked (N=813)	222	27.31
Mother smoked (N=813)	19	2.34
Others family members smoked (N=813)	173	21.28
Females		
A family member smoked (N=892)	326	36.55
Father smoked (N=892)	218	24.44
Mother smoked (N=892)	14	1.57
Others family members smoked (N=892)	191	21.41
Smokers		
A family member smoked (N=200)	112	56.00
Father smoked (N=200)	77	38.50
Mother smoked (N=200)	7	3.50
Others family members smoked (N=200)	57	28.50
Non-smokers		
A family member smoked (N=1505)	545	36.21
Father smoked (N=1505)	363	24.12
Mother smoked (N=1505)	26	1.73
Others family members smoked (N=1505)	2989	19.20

Table 6.4 Age of initiation of smokers

	All			Males			Females			Difference
	N	Mean	SD	N	Mean	SD	N	Mean	SD	(Males-Females)
Age of initiation	197	18	2.29	191	18.00	2.23	6	17	3.87	0.8387 (n.s.)

Table 6.5 Current alcohol consumption status

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
Yes	253	14.84	227	27.92	26	2.91
No	1452	84.16	586	72.08	866	97.09
Total	1705	100.00	813	100.00	892	100.00

Table 6.6 Beer and alcohol consumption per month

	All			Males			Females		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Nb of beers	164	8.96	23.05	151	9.29	23.96	13	5.14	4.94
Nb of glasses of alcohol	164	16.16	27.33	150	15.31	26.47	14	25.26	35.17

Table 6.7 Family alcohol consumption during childhood

	All	
	N	Percent
All		
A family member consumed alcohol (N=1705)	823	48.27
Father consumed alcohol (N=1705)	628	36.83
Mother consumed alcohol (N=1705)	77	4.52
Others family members consumed alcohol (1705)	296	17.36
Males		
A family member consumed alcohol (N=813)	413	50.80
Father consumed alcohol (N=813)	302	37.15
Mother consumed alcohol (N=813)	41	5.04
Others family members consumed alcohol (N=813)	156	19.19
Females		
A family member consumed alcohol (N=892)	410	45.96
Father consumed alcohol (N=892)	326	36.55
Mother consumed alcohol (N=892)	36	4.04
Others family members consumed alcohol (N=892)	140	15.70
Alcohol consumers		
A family member consumed alcohol (N=253)	165	65.22
Father consumed alcohol (N=253)	126	49.80
Mother consumed alcohol (N=253)	14	5.53
Others family members consumed alcohol (N=253)	70	27.67
Non-alcohol consumers		
A family member consumed alcohol (N=1452)	658	45.32
Father consumed alcohol (N=1452)	502	34.57
Mother consumed alcohol (N=1452)	63	4.34
Others family members consumed alcohol (N=1452)	226	15.56

Table 6.8 Age of initiation of smokers

	All			Males			Females			Difference
	N	Mean	SD	N	Mean	SD	N	Mean	SD	(Males-Females)
Age of initiation	237	18	2.32	218	18	2.31	19	19	2.31	0.8122

Table 6.9 Current disease

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
Yes	139	8.15	61	7.50	78	8.74
No	1566	91.85	752	92.50	814	921.26
Total	1705	100.00	813	100.00	892	100.00

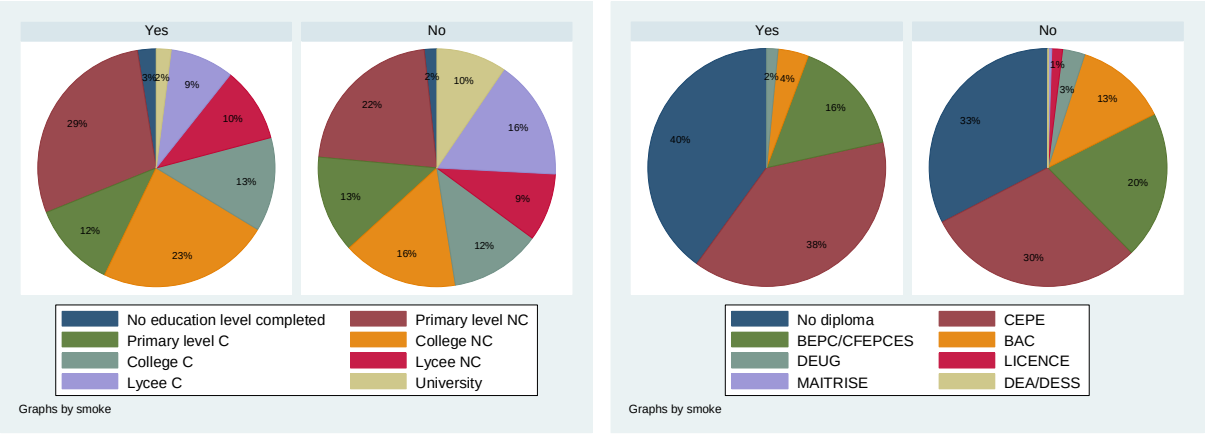
Table 6.10 Type of current disease

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
Diarrhea, digestive problems	23	16.55	12	19.67	11	14.10
Mental or/and physical disabilities	16	11.51	7	11.48	9	11.54
Heart, blood pressure problems	13	9.35	5	8.20	8	10.25
Tuberculosis/breathing problems	15	10.79	9	14.75	6	7.69
Malaria	10	7.19	4	6.56	6	7.69
Flu	11	7.91	3	4.92	8	10.25
Others	51	36.69	21	34.43	30	38.46
Total	139	100.00	61	100.00	78	100.00

Table 6.11 Duration of current disease

	All		Males		Females	
	N	Percent	N	Percent	N	Percent
Less than a year	11	20.75	6	31.58	5	14.71
1–5 years	12	22.64	4	21.05	8	23.53
5–10 years	18	28.57	7	36.84	11	32.35
More than 10 years (but not since the birth)	7	13.20	1	5.26	6	17.65
Since birth	5	9.43	1	5.26	4	11.76
Total	53	100.00	19	100.00	34	100.00

Figures—Health



Note: C for completed, NC for not completed.

Fig. 6.1 Education level according to smoking status

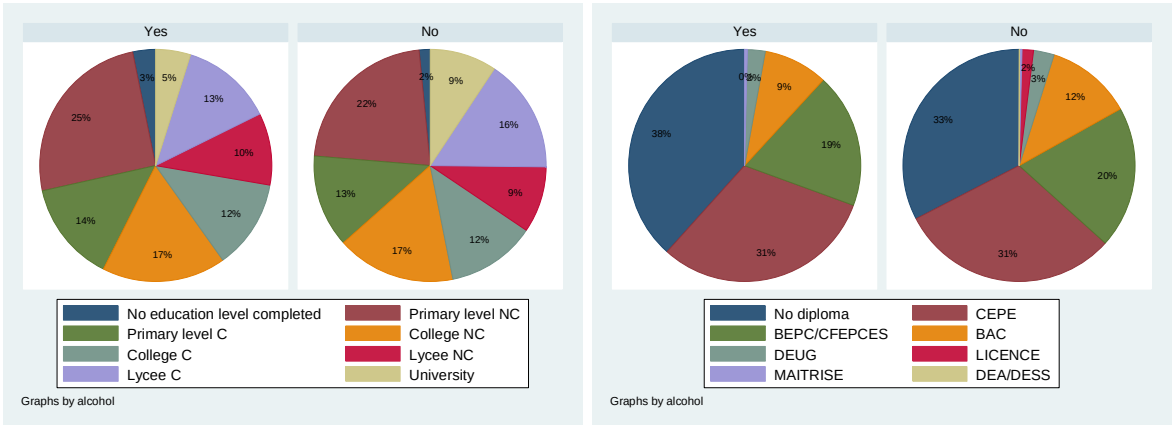


Fig. 6.2 Education level according to alcohol consumption status

7. Fertility, Family Planning and Anthropometric Outcomes

We have fertility information for 859 women in the cohort sample. Table 7.1 shows that 54% (466) of the women in the sample are mothers. The average age of first birth is 18 years (standard deviation 2.12), which is consistent with the 2009 Demographic Health Survey (DHS) at the national level. Almost 60% of themothers have only one child while 32% report having two, and the rest of the group report having three or more. Additionally, only 6% of the women are currently pregnant, and 32% desire to get pregnant.

Table 7.2 shows that 31.2% of the young women in the cohort sample use family planning, modern or traditional methods. Among the young women who are not currently using any method, only 9% used family planning five years prior to the survey. These numbers reflect a very low use of family planning methods which is consistent with the 2009 DHS data: the prevalence rate of family planning among married women between 15 and 49 years old is 29% at the national level. In addition, Table 7.2 shows that only 20% of women in the sample have been visited by community family planning workers during the last year.

We also analyzed the use of family planning with respect to women's years of education and their highest level of schooling. Interestingly, we observe that women who are not using family planning have on average 7.77 years of education, whereas their counterparts who use some form of contraception have 7.2 years. Although this difference is not large in magnitude, it is statistically significant. With respect to level of education, we do not observe major differences during the progression through primary school, but we do observe that women who are not users of family planning have achieved higher levels of education after secondary school. For instance, while 11% of non-users have superior/university studies, only 3% of the users are at this level (Table 7.3).

This relationship of education and family planning use could be related to the fact that, in Madagascar, women who use contraceptive methods are already mothers and have received less education, as we will describe later. In fact, Table 7.4 indicates that there is a larger group of family planning users among the mothers compared to the non-mothers. This is consistent with the fact that almost 40% of women in Madagascar use family planning for the first time after they have already had at least one child (DHS 2009).

The results from community questionnaires, shown in Table 7.4, describe access to family planning services among young women. Access is defined as the availability of family planning services in the community where the young woman lives. This is not a woman's self-reported information, but rather based on answers given by community leaders about social infrastructure and services at the community level. We observe that, on average, the group of mothers has less access to family planning services, specifically, to pills and condoms than the group of non-mothers.

Table 7.5 shows the educational outcomes for ever mothers and non-mothers. Although 34% of the non-mothers still attend school, only 3% of the ever mothers are enrolled. These patterns are consistent with the years of education completed by the two groups, as also shown in Table 7.5. While the group of mothers completed 6.2 years of schooling, the corresponding completion figure for non–mothers is 9.25. This difference is reflected in the data on the progression through school. Among the group of mothers, only 5% completed upper secondary, although this percentage is almost five times larger than for the non-mothers. Also, 17% of the women who have not yet had their first birth have some university education, whereas this percentage among young mothers is negligible.

This difference in the school attainment between mothers and non-mothers is also reflected in the test score performance. The share of young women in the upper quintiles of the math and French test scores distribution is far greater for those who are not yet mothers in 2012 than for those women who have given birth by 2012 (Figures 7.1a and 7.1b).

To illustrate the timing of women's education and fertility decisions, we calculate the difference between the age of awareness of conception and age of dropping out of school, and classify the young women according to the timing of these two decisions (Figure 7.2). We find that almost 24% of the sample, or 46% of the young mothers became pregnant while they were in school. In contrast, 30% of the girls drop out of school, but they have not become pregnant by the time of the survey. It is noteworthy that 27% of the young women drop out much sooner than their first birth, indicating that there is no overlap between their fertility and education decisions. Finally, we also observe that only 16% of the young women are still attending school at the time of the survey are "non-mothers." A very negligible proportion of the sample (2%) are " mothers" and currently enrolled in school, which suggests the difficulty of continuing education once ae young woman has had her first child.

Children's Anthropometric Outcomes

To construct the anthropometric outcomes, we use the height, age, and weight information of the children included in the fertility module, who are sons and daughters of the female cohort members. We restrict the anthropometric measurements for those children aged 5 or younger.

Table 7.6 shows the height-for-age (HAZ) score for the children in the sample. There are not statistically significant differences between girls and boys. This is a long-term child health indicator widely used to measure chronic malnutrition. We observe in Table 6 that 48% of the children are stunted (i.e., the child HAZ is below -2 SD). This is consistent with the national level of 50% stunting as measured by the 2009 DHS. The severe stunting (i.e., the percentage of children with HAZ below -3 SD) is 31%.

Table 7.7 shows the weight-for-age (WAZ) indicator for children in the sample. Girls present a better indicator than boys, and this difference is statistically significant. Indeed, although 19% of the girls are underweight (i.e., the child WAZ is below -2 SD), this percentage is 28% among boys.

Finally, Table 7.8 shows the weight-for-height (WAH) indicator. There are statistically significant differences between girls and boys; girls show better performance in this health indicator. The percentage of children who are wasted (i.e., children with WAH below -2 SD) is 17%, and among girls this percentage decreases to 11%.

Tables

Table 7.1 Fertility outcomes among young women

	Mother		Currently pregnant		Desire to be pregnant	
	N	Percent	N	Percent	N	Percent
Yes	466	54.25	56	6.52	282	32.83
No	393	45.75	784	91.27	510	92.20
Missing			19	2.21	67	7.80
Total	859	100.00	859	100.00	859	100.00

Table 7.2 Young women's reported family planning use

	Current family planning use (FP)		If not current, family planning use 5 years ago		In the last 12 months have some FP workers visited you ?	
	N	Percent	N	Percent	N	Percent
Yes	268	31.2	55	9.31	170	19.79
No	591	68.8	521	88.16	678	98.72
Missing			15	2.54	11	1.28
Total	859	100.0	591	100.00	859	100.00

Table 7.3 Family planning use by women's education

	Users, family planning	Non-users, family planning	Total
Years of schooling	7.2	7.77	7.59
% Highest education level			
None	1.49	2.03	1.86
Some primary	20.52	22.84	22.12
Completed primary	16.79	14.21	15.02
Some college	22.39	12.01	15.25
Completed college	15.3	14.21	14.55
Some lycee	8.58	8.8	8.73
Completed lycee	11.19	14.38	13.39
Superior	3.73	11.51	9.08
Total	100.00	100.00	100.00
N	268	591	859

Table 7.4 Access and family planning use among young women

	Non-mothers	mother	All
% Family planning Use	18.07	42.27	31.2
% 2012 FP services access	91.09	80.9	85.56
% 2012 pills access	83.21	73.61	78
% 2012 Condoms access	84.48	69.10	76.10
N	393	466	859

Note: The differences between non-mother and ever mothers for the FP variables are statistically significant at 1% level. Source: Herrera and Sahn (2013).

Table 7.5 Education for mothers and Non-mothers

	Mothers	Non-mothers	All
% School enrolment	3.27	34.00	17.39
Years of education	6.20	9.25	7.60
	(3.18)	(3.74)	(3.77)
% Completed primary	18.67	10.69	15.02
% Completed lower secondary	14.81	14.25	14.55
% Completed upper seconday	4.94	23.41	13.39
% Some university	1.93	17.56	9.08
No of observations	466	393	859

Notes: Standard deviations in parentheses.
Differences between groups are statistically significant at 1%.

Table 7.6 Height-for-Age (HAZ) for children under age of 5

	Boys	Girls	Total
HAZ Score	-1.73	-1.71	-1.72
Stunting (%)	0.46	0.49	0.48
Severe Stunting (%)	0.30	0.32	0.31
N	270	247	517

Stunting is defined as the percentage of children with HAZ score below -2 SD.
Severe Stunting is defined as the percentage of children with HAZ score below -3 SD.

Table 7.7 Weight-for-Age (WAZ) for children under age of 5

	Boys	Girls	Total
WAZ Score	-0.98	-0.51	-0.76
Underweight (%)	0.28	0.19	0.23
N	270	247	517

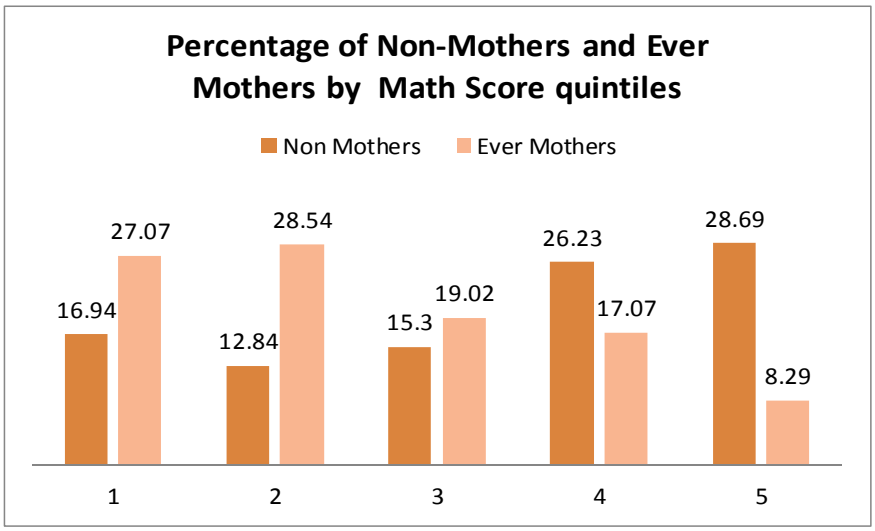
Underweight is defined as the percentage of children with HAZ score below -2 SD

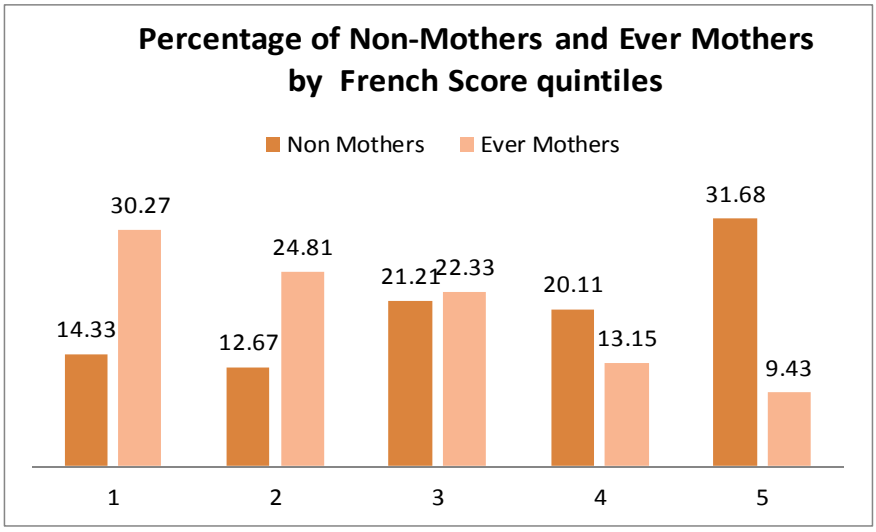
Table 7.8 Weight-for-Height/Length for children under age of 5

	Boys	Girls	Total
WAH Z-Score	0.04	0.68	0.34
Wasting (%)	0.23	0.11	0.17
N	264	243	507

Wasting is defined as the percentage of children with WAH score below -2 SD

Figures

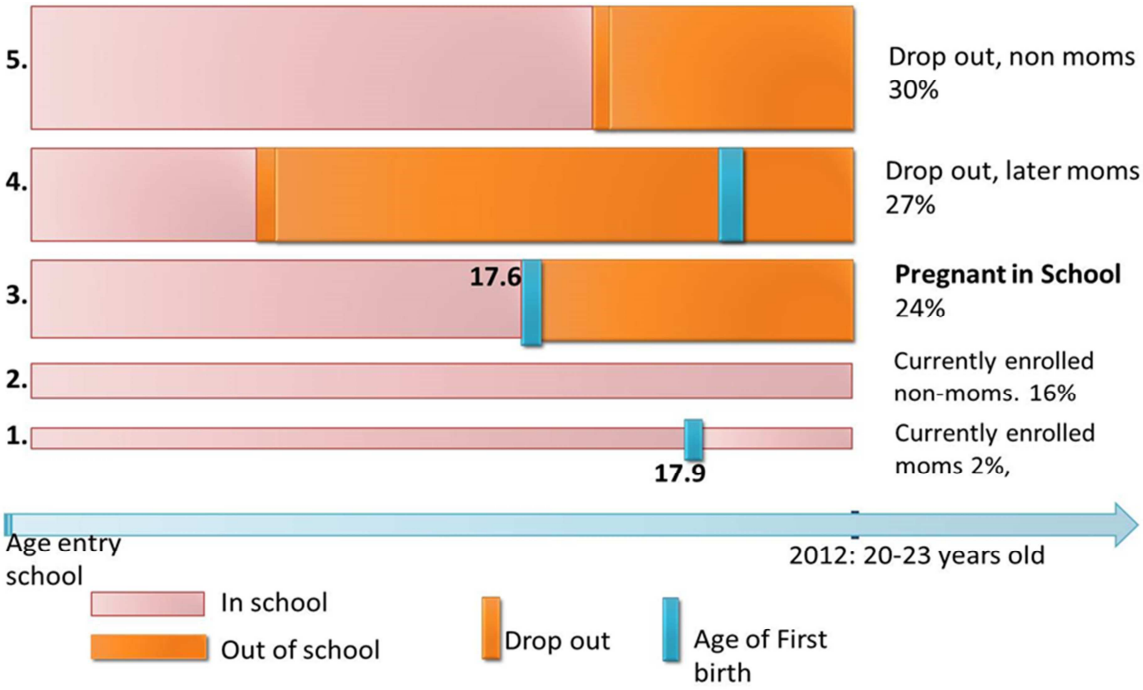




Source :Herrera and Sahn (2013)

Figure 7.1a Percentage of non-mothers and ever mothers by math score quintiles

Figure 7.1b Percentage of non-mothers and ever mothers by French score quintiles



Source: Herrera and Sahn (2013)

Figure 7.2 School enrollment, dropping out, and pregnancy

8. Migration

Nearly one third of cohort members have migrated. The majority of these, or two-thirds, live alone, outside their original household. We consider different types of migration by the extent of the displacement. Starting from the initial place of residence, in most cases, it is (i) a migration within the district or (ii) while changing districts, migration is within the same province. Starting from no migration, the migration rate decreases as the distance of destination. Next, these categories are distinguished by the level of education attained by the members of this cohort, the types of employment of those who are in the workforce and their status in their jobs. Indeed, the education supply as well as employment opportunities depend on the communities and motivate substantial displacement (Table 8.1)

Highest level of education

Migration, far from one's place of origin, has allowed some members of the cohort, to achieve a relatively high level of education: secondary education. Thus, among those who migrated, 29% of those who changed province reached or completed their education at the university level, while 30% of those

who stayed in the same district have completed only high school. In contrast, nearly three-quarters of those who have never migrated completed at most the college level (Figure 8.1)

Two-thirds of those who have migrated are currently employed, which reinforces the idea that migration is related, in large part, to looking for work. In addition, one-fifth of our population is still studying. This proportion increases to 40% for those who moved to another province, consistent with the fact that the availability of higher education institutions requires these displacements (Figure 8.2)

We distinguish two types of work activity performed by those who migrate. On the one hand, services (trade, transport, etc.) predominantly concern those who have moved to another province. Agriculture is the primary concern for those who remain in their same district. A large majority of migrants (44%) work in family businesses (agricultural or service-related). Only a quarter of these migrants work in their own businesses, created by themselves. The remaining work is in private companies or in the public sector (Tables 8.2, 8.3, 8.4).

Tables

Table 8.1 Migration status, by gender

	Male		Female		Total	
	N	Percent	N	Percent	N	Percent
Within district	108	13.06	140	15.57	248	14.37
Within province. between districts	85	10.28	100	11.12	185	10.72
Between provinces	45	5.44	52	5.78	97	5.62
No information	5	0.60	6	0.67	11	0.64
Has not migrated	584	70.62	601	66.85	1185	68.66
Total	827	100.00	899	100.00	1726	100.00

Table 8.2 Industrial sector by category of migration

	Agriculture / livestock	Manual labor / low Skill	Service	High skill	Total
Within district	52.97	4.32	41.62	1.08	100.00
Between districts	25.69	4.59	61.47	8.26	100.00
Between provinces	19.15	4.26	70.21	6.38	100.00
No information	60.00	0.00	40.00	0.00	100.00
Total	39.88	4.34	51.73	4.05	100.00

Table 8.3 Main occupational categories among the employed

	Public / private Sector	Self-employed	Family enterprise / domestic work	Total
Within district	23.78	31.89	44.32	100.00
Between districts	36.70	17.43	45.87	100.00
Between provinces	21.28	40.43	38.30	100.00
Total	27.57	28.45	43.99	100.00

Table 8.4 Employment status by category of migration

	Male			**Female**			**All**			**All**
	Unempl'd	Working	Student	Unempl'd	Working	Student	Unempl'd	Working	Student	
Within district	4	85	19	20	100	17	24	185	36	245
Between districts	11	54	15	18	55	24	29	109	39	177
Between provinces	3	23	17	7	24	21	10	47	38	95
No information		3		2	2	2	2	5	2	9
Has not migrated	19	507	53	61	482	56	80	989	109	1178
Total	37	672	104	108	663	120	145	1335	224	1704

Table 8.5 Distribution of the cohort members in 2003 and 2012 at region level, by status of migration

	2003			2012	
	Have not emigrated (a)	**Have emigrated** (b)	**Total** (a)+(b)	**Are immigrants** (c)	**Total** (a)+(c)
ANALAMANGA	90	31	121	76	166
VAKINANKARATRA	92	50	142	44	136
ITASY	20	0	20	4	24
BONGOLAVA	94	22	116	8	102
MATSIATRA AMBONY	116	24	140	31	147
AMORON I MANIA	85	50	135	25	110
VATOVAVY FITOVINANY	67	29	96	23	90
IHOROMBE	0	0	0	5	5
ATSIMO ATSINANANA	25	20	45	16	41
ATSINANANA	69	39	108	61	130
ANALANJIROFO	25	15	40	1	26
ALAOTRA MANGORO	86	49	135	32	118
BOENY	46	14	60	25	71
SOFIA	36	4	40	3	39
BETSIBOKA	21	4	25	0	21
MELAKY	54	13	67	7	61
ATSIMO ANDREFANA	92	58	150	63	155
ANDROY	47	24	71	15	62
ANOSY	15	5	20	4	19
MENABE	0	0	0	6	6
DIANA	17	10	27	23	40
SAVA	100	47	147	36	136
Total	1197	508	1705	508	1705

Figures

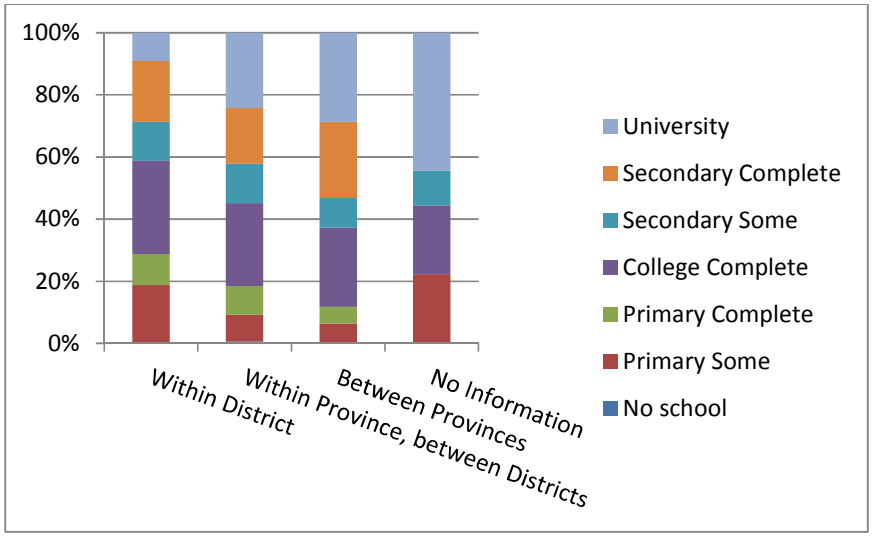


Fig. 8.1 Educational attainment by migration status

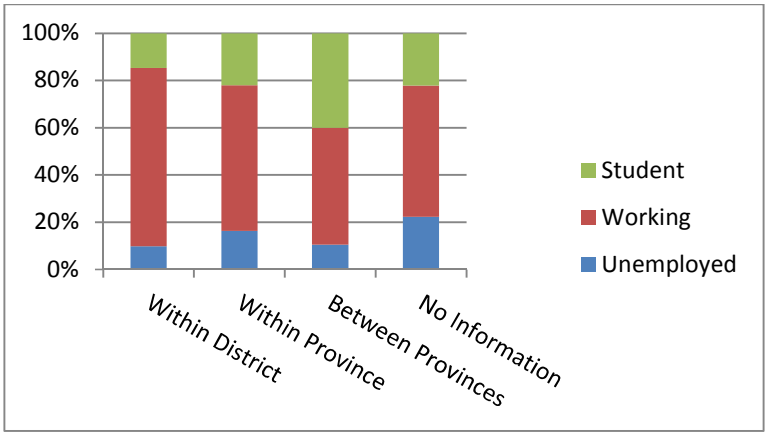


Fig. 8.2 Employment status by migration status

9. Personality Traits

Table 9.1 describes the distribution of standardized personality traits by gender in the sample. In all traits (conscientiousness, extroversion, openness to experience, and agreeableness) except neuroticism, males have significantly higher levels than females. However, males are significantly less neurotic than females.

Table 9.2 describes personality traits by school enrollment status. Individuals currently enrolled in school have significantly higher levels of conscientiousness, extroversion, openness to experience, and agreeableness. Table 9.3 and Figure 9.1 illustrates these same personality traits with respect to the last school an individual was enrolled (Figure 9.1 excludes kindergarten since only one individual falls in that category). Levels of conscientiousness, extroversion, and openness to experience all increase with the level of education, while neuroticism decreases with level of education. Agreeableness also increases with education from primary school to the university; however, it is also highest for those who were last enrolled in community school.

Table 9.4 and Figure 9.2 describe personality traits with respect to the main occupational category. High levels of conscientiousness, openness to experience, and extroversion are found among students and individuals working in the public and private sector. Neuroticism is low among individuals in these categories. The unemployed also have high levels of conscientiousness and extroversion but lower levels of openness to experience. Self-employed individuals have personality traits that are largely close to zero (or average levels of each personality trait). This is likely due to a great deal of occupational heterogeneity remaining in the self-employed category. Individuals working in family enterprises or doing domestic work in other households have negative levels of conscientiousness, extroversion, openness to experience, and agreeableness. It is also the only category to exhibit positive levels of neuroticism.

Tables

Table 9.1 Standardized personality trait factor scores by gender

	Male		**Female**		**Total**		Difference
	N	Mean	N	Mean	N	Mean	
Conscientiousness	811	0.061	881	-0.048	1692	0.005	0.109
Extroversion	811	0.103	881	-0.086	1692	0.005	0.189
Neuroticism	811	-0.083	881	0.070	1692	-0.003	-0.152
Openness to experience	811	0.117	881	-0.098	1692	0.005	0.215
Agreeableness	811	0.062	881	-0.048	1692	0.005	0.110

Table 9.2 Standardized personality trait factor by school enrollment status

	Currently in School		**Currently Not in School**		**Total**		Difference
	N	Mean	N	Mean	N	Mean	
Conscientiousness	366	0.194	1326	-0.053	1697	0.002	0.247
Extroversion	366	0.145	1326	-0.037	1697	0.004	0.182
Neuroticism	366	-0.025	1326	0.013	1697	0.007	-0.039
Openness to experience	366	0.334	1326	-0.084	1697	0.009	0.418
Agreeableness	366	0.104	1326	-0.033	1697	-0.001	0.136

Table 9.3 Standardized personality traits by last school enrolled

	Kindergarten		Community		Primary		College/CEG		High School		University	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
Conscientiousness	1	-2.82	8	-0.09	614	-0.17	481	-0.05	432	0.19	153	0.35
Extroversion	1	-1.79	8	-0.41	614	-0.19	481	-0.02	432	0.21	153	0.33
Neuroticism	1	1.42	8	0.84	614	0.09	481	0.06	432	-0.12	153	-0.21
Openness to experience	1	-1.74	8	-0.37	614	-0.27	481	-0.02	432	0.25	153	0.51
Agreeableness	1	-1.78	8	0.40	614	-0.13	481	-0.01	432	0.14	153	0.15

Table 9.4 Standardized personality traits by occupational xategory

	Public/Private Sector			Self-Employed			Famliy Enterprise/ Domestic Work			Student			Unemployed		
	N	Mean	Standard Deviation	N	Mean	Standard Deviation	N	Mean	Standard Deviation	N	Mean	Standard Deviation	N	Mean	Standard Deviation
Conscientiousness	207	0.25	0.89	412	0.06	0.92	656	-0.18	1.04	257	0.18	0.92	105	0.17	1.18
Extroversion	207	0.19	0.87	412	0.02	0.94	656	-0.16	1.03	257	0.14	0.95	105	0.18	1.18
Neuroticism	207	-0.15	0.90	412	-0.01	0.97	656	0.04	1.01	257	-0.04	1.02	105	-0.02	1.09
Openness to experience	207	0.32	0.86	412	-0.06	0.95	656	-0.20	1.00	257	0.36	0.91	105	0.07	1.21
Agreeableness	207	0.14	0.97	412	0.03	0.96	656	-0.10	0.99	257	0.11	0.99	105	0.08	1.19

Figures—Personality Traits

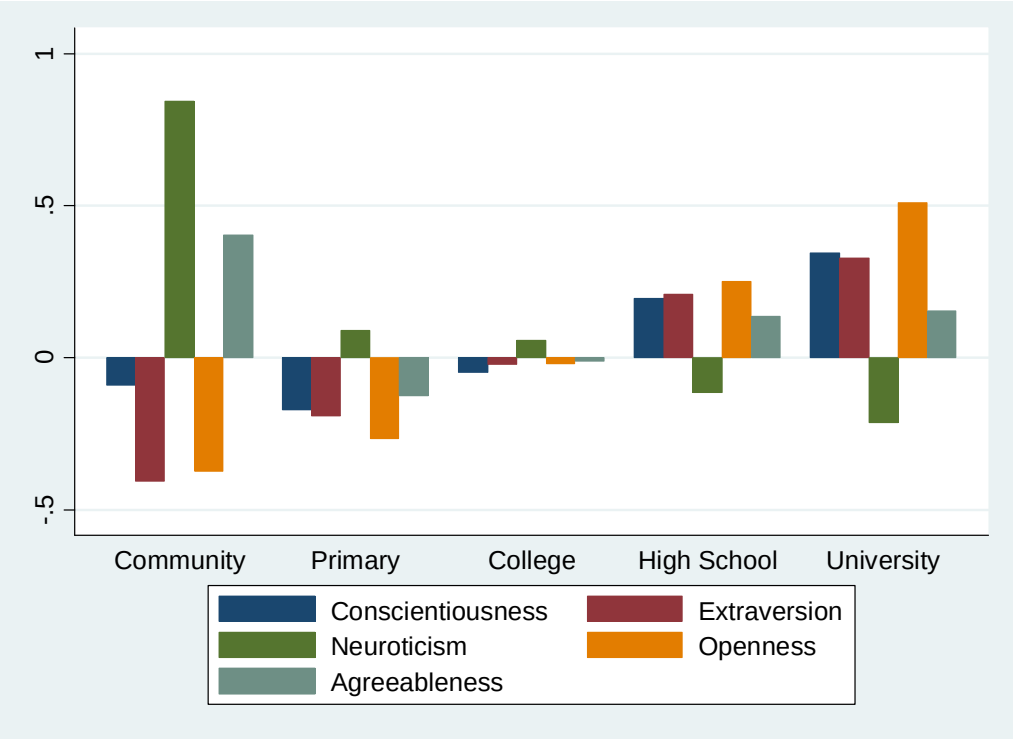


Fig. 9.1 Personality traits by last school enrolled

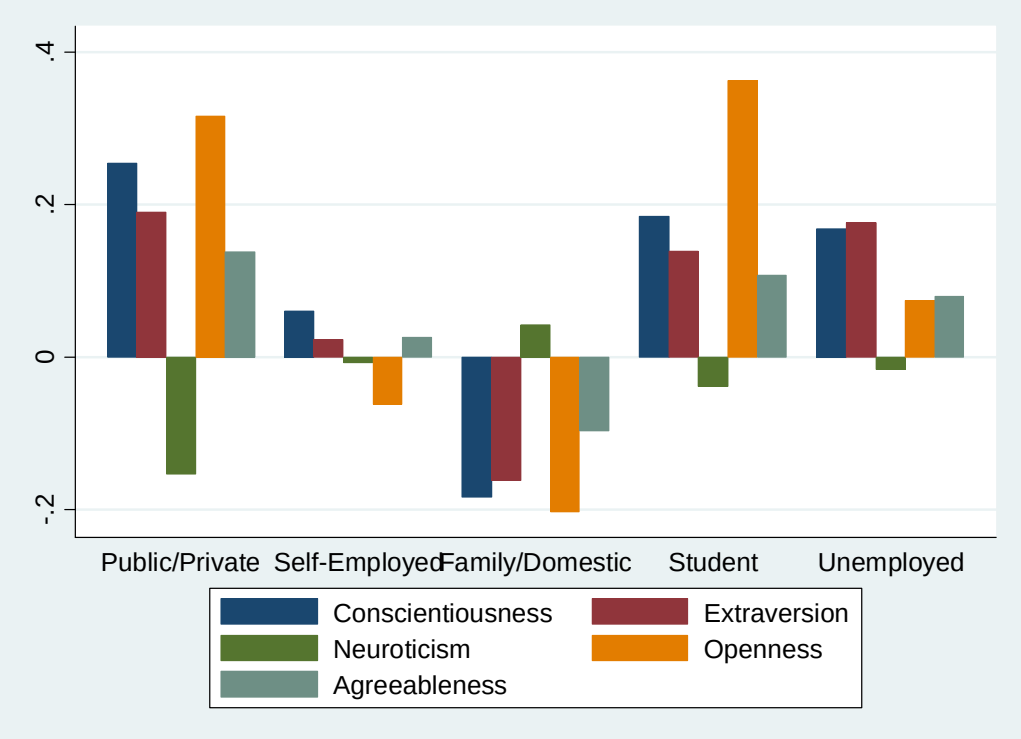


Fig. 9.2 Standardized personality traits by occupational category

10. Entrepreneurship

Three-quarters of entrepreneurial activities performed were created from many small enterprises, and do not represent the resumption of any existing activity from parents or family. The main motivation is to supplement the family income. With little access to credit from formal institutions such as banks or microcredit, start-up funds consists mainly of personal contributions and support from the family. Two types of activities are identified: agriculture and livestock, on the one hand, and trade on the other hand. These are small businesses not hiring a lot of capital, with low turnover, and a small size (two or three workers on average). These enterprises are associated with certain characteristics of informality, such as non-registration with the appropriate authorities. Only six out of 250 pay taxes, and five are registered at INSTAT. This informality relates also to the lack of access to loans from banks or microfinance institutions. The complexity of application procedures and fears of inability to pay are so pervasive that most prefer to rely on support from the family. Moreover, only a small part of the profits is re-invested in the business. This greatly reduces the potential for expansion of these activities.

Tables

Table 10.1 Main reasons to undertake an activity

	Percent
Family tradition	11.82
To supplement the family income	41.13
To have a higher income than from wage employment	6.16
To have a flexible work schedule and be one's own boss	5.17
Desire for independence	18.97
Loss of previous job	0.49
This is a good business opportunity	4.68
Could not find another job	11.58
	100.00

Table 10.2 Sources of funding at the activity start-up

	Percent
Borrowing from family members without interest	12.56
Borrowing from family members with interest	2.42
Borrowing from friends without interest	3.86
Transfers from abroad	0.48
Private lenders	3.86
Own savings	40.58
Bank loans	1.93
Loans from microcredit institutions	0.97
Sale of family goods	1.93
Credit from suppliers	0.97
Inheritance from a parent or other family member	6.28
Donations from parents, family members, or friends	14.98
Liquidation from previous job	0.48
Other	8.70
Total	100.00

Table 10.3 Distribution of businesses by use of profits

Use	**Re-invested in the business**	**For the use of one's household needs**	**For the use of one's own needs**
N	251	243	247
Part	Percent	Percent	Percent
All or almost all	3.29	26.72	3.78
More than half	19.75	29.96	4.62
Nearly half	13.58	17.41	5.04
Less than half	10.29	12.15	11.76
Quarter or less	13.17	8.50	30.25
No part	39.92	5.26	44.54
	100.00	100.00	100.00

Table 10.4 Main reasons not to ask for a loan from a bank or microfinance institution

Reason	Percent
I did not think that banks lend to people like me.	23.89
High interest rates	9.22
I have no collateral	10.48
I feel no need to borrow	22.43
I am suspicious about loans	8.39
Problems of eligibility other than collateral	5.24
Concerns about paying back loan	12.37
Other reasons	7.98
Total	100.00

11. Agriculture

Concerning more than 75% of labor force, agriculture issues are very important for Madagascar, and particularly for young people. Taking into account the cultural value of land and conditions of life in rural areas, the probability of intergenerational transfer of agricultural professions is relatively high and access to other activities is difficult. Most of young people are family workers, the access to independent status is late and difficult because of respect for parents, risk aversion, and non-availability of agricultural and rural insurance systems. Finally, the premature entry of children and teenagers into the agricultural labor market influences their schooling, and thus, their life course.

The survey allows us to analyze the conditions of activities on farms for young members of the cohort households: access to land and machinery, farm area, land and livestock acquisition mode, and capital value. We make the analysis for two different groups of households. The first group contains all the “original households” in which cohort members belonged and which did not change since the last survey in 2003. The second group is composed of “new households” in which cohort members belong now and which are different from their households in 2003. A large majority of these new household are created by the young cohort members themselves after separation with their original households (marriage, migration). By analysis of the situation in the two groups of households, we can determine the evolution of agricultural activities for young persons in terms of capital accumulation.

For the survey, farms were considered “possessed” whether on owned or rented lands, or given to the household by another entity (government, company, other households). Six categories of lands were considered: rice fields, lands for cash-culture, lands for fruit trees–forest-orchards, lands for root and tuber crops, and lands for other crops.

The results show that, among the households of young cohort members, more than 71.4% possess farms. Rice farming is the most practiced, which is engaged in by 62.7% of households in Madagascar. This is consistent with the fact that rice is the staple food for the Malagasy people in all

regions. Then, root and tuber crops account for the second largest production with about 54.7% occupied households. The cash crops and fruit trees planting are relatively rare.

According to the two different groups of households, the practice of the agriculture is less frequent for the "new households" of cohort members. Less than 61.2% of them farm lands, whereas the percentage is more than 81.4% for the "original households." This result is valid for each category of lands. So, two interpretations are possible. On the one hand, the cohort of young people move more frequently to non-agricultural households, confirming the phenomenon of the rural exodus. Despite this phenomenon, the transfer of agricultural activities between generations remains important. On the other hand, the separation of the young people from their original household is earlier in non-agricultural households than in agricultural households. (Table 11.1).

In Madagascar, agriculture is still dominated by subsistence activities and small-scale farms. The average area is estimated about 94.1 hectares per household. With an average household size about 4.9 persons in rural areas, the large majority of agricultural households are suffering financial hardship and often fall into a poverty trap: low level of production capacity, low income, low rate of capital accumulation, low farm yields. Young people have to face these precarious living conditions for which they were not directly responsible.

The survey also revealed strong inequalities in land distribution between agricultural households. If the median area is only 13.0 ares per agricultural household, 10% among them farm, on average, more than two hectares. These figures are consistent with the findings of 2011–2012 household survey. There might be a number of reasons for this, e.g., the slow development of land market, differences in weather conditions and relief between regions, initial land endowments, and inefficiency of public lands reallocation policies.

Even if rice growing is the most practiced, it is less important in terms of planted area surface with only 37.6 ares per household. The average farm sizes for other crops are significantly larger: 62.8 ares per household for fruit tree forest–orchard lands, 53.4 ares per household for lands for cash crops, and 48.5 ares per household for lands for root and tuber crops. Traditional rice growing techniques, mainly adopted by agricultural households, are practiced only in small areas: on lowland, irrigated rice fields or the slopes of mountains. The upland rice farming, large scale irrigated surfaces, and mechanized rainfed farming are especially operated by big societies.

The removal of a young person from one household to another is often accompanied by a slight improvement in that young person's situation, with respect to farm size. Indeed, the average area utilized by the "new households" is significantly more important compared with those of the "original households": 99.4 ares vs. 88.9 ares. This finding is valid for all land categories except lands for fruit tree forest–orchards : 69.8 ares vs. 41.5 ares for lands for cash crops, 50.6 ares vs. 46.5 ares for lands for root and tuber crops, and 42.4 ares vs. 32.8 ares for rice fields. One the other hand, for fruit trees forest–orchards lands, the average area for "new households" is slightly less than for "original households": 56.7 ares vs. 67.1 ares (Table 11.2).

In addition to access to land mentioned previously, the climate and watering system represent major constraints which reduce lands yields, lead to suboptimum use of lands, and limit productive capacity in agriculture. As Madagascar is a big island and little continent, various agro-climatic zones can be found: semi-desert plateau with hot and dry climate in the south, large plain with moderate continental climate in the west, mountainous areas with wet climate in the east, fertile uplands and lowlands with temperate climate in the center, and finally, plains with wet climate in the North. Because of water control problems and agricultural habits, monoculture prevails, and off-season crops (dry season) are practiced only in Madagascar's central highlands.

According to the results of the survey, more than 52% of the lands farmed by the households are cultivable only during the rainy period. Obviously, it depends on the type of crops. The rice-production is feasible only during the rainy period for more than 38% of the available lands. For root and tuber crops, the case appears for 28.6% of lands. For other types of culture, the constraint is less important: the culture is possible even during dry period except for 7.7% of of the cash-crops lands, 6.4% for fruit tree forest–orchard lands, and 2.2% for other types of crops.

For young cohort members who changed agricultural households between 2003–2011, the situation is substantially better: a larger part of the farmed lands were cultivable during dry period. For the "new households," more than 54.3% of lands were cultivable during dry periods, whereas for the "original households," this proportion is only 40% (Table 11.3).

The unequal and inefficient distribution of land is the most important cause of vulnerability for agricultural households. More than 82.3% of agricultural households are individually landowners. In 11.9% of the cases, lands do not belong to the farming household. Jointly-owned land is relatively rare: less than 6% of the total. These proportions vary according to the category of lands. More than 89.5% of lands for fruit tree forests–orchard crops and 87.9% of cash crop lands are individually owned by the households. This proportion decreases to 79.3% for rice fields. The "new households" of young cohort members are less frequently landowners: only 77.1% vs. more than 87.2% for "original households."We find the same result for each category of lands (Table 11.4).

More than 72.7% of lands owned by households were acquired by inheritance. Purchased farms constitute only 17.6% of the land acquisitions. Other acquisition modes like clearing or donations (family or friend, local state, State) are relatively rare. Concerning cash crop lands, the inheritance is less frequently: only 67% of lands are transferred in this manner. The endowments of lands of the "new households"" of young cohort members are much more likely to be transmitted by inheritance: 78.2% of the cases vs. only 68.2% for "original households" (Table 11.5).

The average value of the land endowments is estimated at 3,721,300 Ariary per household. According to the category of lands, the average values are different: 2,712,700 Ariary for rice fields, 1,422,600 Ariary of cash-crop lands, 1,178,800 Ariary of lands for fruit tree forest–orchards, 1,020,100 Ariary of lands for root and tuber crops. "New households" are less provided with less land value by more than half as compared to the "original households: 2,455,000 Ariary vs. 4,861,000 Ariary (Table 11.6).

The outcomes confirm strong support of Malagasy households for the social and cultural value of lands. The land transfers are rare and have an exceptional character to the households. Only 65 households, among 1,555 households, of young cohort members (or 4.2%) sold, gave, or abandoned the lands that they operated during the last 10 years. Especially for "new households," the proportion is much lower: only 7 households, among 851 households. More than half of surrendered lands are rice fields and a third part are lands for root and tuber crops. The land market is still weakly developed in Madagascar. Less than 58.7% of surrendered lands were sold. The donations to families or friends accounted for more than 38% of the cases. Expropriation is nearly non-existent (Table 11.7).

The agricultural production remains technologically backward, which leads to slow progress in productivity, profitability improvement and rural welfare in Madagascar. The agricultural mechanization is still at the embryonic state, and access to machinery is limited. Just over two-thirds of agricultural households possess farm equipment. Furthermore, these materials are in most cases small equipment such as mowers and pestles: 56.4% and 50.9%, respectively, of households possess

these two pieces of equipment. On the other hand, even for the essential agricultural materials such as plow, harrow, and weeder, less than 16% of the households have access to these implements.

Concerning the big machines and more sophisticated equipment as tractors, watering systems, threshing machines, and peeling machines, most of the agricultural households are deprived. The situation is not the same between the "new households" and the "original households" of young cohort members: those in the latter category are much more supplied—more than 77% of households possess farm implements, and the difference is valid even for the small equipment.

The evaluation of farm equipment gives an estimation of physical capital amount: on average, about 119,700 Ariary per agricultural household. The disparity is very strong because half of them possess only approximately 30,000 Ariary (median). For the "new households," the value is twice as low as compared with that of the "original households" (Table 11.8).

Concerning the farm animals, about 63% of households own livestock. The small farm animals, particularly, laying hens, are the most frequent. More than half the households (51%) of the young cohort members have these. Cattle and pig farming concern 17% and 16%, respectively, of households. On the other hand, only 2% of households are dairy cow farmers. "New households" of young cohort member are also have less livestock: 55% of them possess livestock. This percentage exceeds 77% for "original households." This difference remains valid for any type of animal breeding (Table 11.9).

More than 63% of farmers acquired their livestock by purchases. About 30% of livestock are new animal offspring bred by the farmers from existing livestock. Transfers such as inheritance, gifts, and dowries account for only 10% of the acquisitions. These latter modes of livestock are employed more frequently by the "new households" of young cohort members, representing more than 14% of these households' acquisitions. They are still at the beginning of the process of capital accumulation.

The average value of livestock is estimated to 2,503,000 Ariary per household: 1,928,000 Ariary for "new households" and more than 3,055,000 Ariary for "original households." For the households possessing zebus or oxen, the average values per farmer are 2,655,000 Ariary and 4,397,000 Ariary, respectively; for the pork farmer, the values are more than 413,000 Ariary and less than 92,000 Ariary for chicken (laying hens) farmer.

Tables

Table 11.1 Proportion of agricultural households (%)

Household type	All categories of land	Rice fields	Land for cash crop	Land for fruit trees, forest	Land for root and tuber crop	Land for other crops
Original HH	81.49	69.87	17.79	17.07	62.98	3.73
New HH	63.17	56.99	10.61	9.44	48.02	2.80
Total	71.38	62.77	13.83	12.86	54.73	3.22

Table 11.2 Average area of operated lands (ares per household)

Household type	All categories of land	Rice fields	Land for cash crop	Land for fruit trees, forest	Land for root and tuber crop	Land for other crops
Original HH	89.0	32.8	41.5	67.1	46.5	47.2
New HH	99.4	42.4	69.8	56.7	50.6	61.0
Total	94.1	37.6	53.5	62.8	48.5	53.8

Table 11.3 Proportion of lands operated only during rainy period (%)

Household type	All categories of land	Rice fields	Land for cash crop	Land for fruit trees, forest	Land for root and tuber crop	Land for other crops
Original HH	60.11	43.04	8.90	8.61	31.28	2.44
New HH	45.69	34.15	6.76	4.66	26.46	2.10
Total	52.15	38.14	7.72	6.43	28.62	2.25

Table 11.4a Part of land for rice crop owned by operated household (%)

Household type	Totality	Large parts	Just more than half	Less than half	Without part	Total
Original HH	85.22	3.90	2.05	0.62	8.21	100.00
New HH	73.42	3.89	2.86	1.64	18.20	100.00
Total	79.30	3.89	2.46	1.13	13.22	100.00

Table 11.4b Part of land for cash crop owned by operated household (%)

Household type	Totality	Large parts	Just more than half	Less than half	Without part	Total
Original HH	91.94	4.03	0.00	0.00	4.03	100.00
New HH	82.42	3.30	1.10	0.00	13.19	100.00
Total	87.91	3.72	0.47	0.00	7.91	100.00

Table 11.4c Part of land for fruit trees, forest owned by operated household (%)

Household type	Totality	Large parts	Just more than half	Less than half	Without part	Total
Original HH	92.44	2.52	0.84	0.00	4.20	100.00
New HH	85.19	2.47	2.47	1.23	8.64	100.00
Total	89.50	2.50	1.50	0.50	6.00	100.00

Table 11.4d Part of land for root and tuber crop owned by operated household (%)

Household type	Totality	Large parts	Just more than half	Less than half	Without part	Total
Original HH	86.79	3.87	0.46	0.46	8.43	100.00
New HH	79.85	2.91	0.97	0.49	15.78	100.00
Total	83.43	3.41	0.71	0.47	11.99	100.00

Table 11.4e Part of land for other crop owned by operated household (%)

Household type	Totality	Large parts	Just more than half	Less than half	Without part	Total
Original HH	84.62	0.00	0.00	0.00	15.38	100.00
New HH	58.33	0.00	0.00	0.00	41.67	100.00
Total	72.00	0.00	0.00	0.00	28.00	100.00

Table 11.4 Part of land (all categories) owned by operated household (%)

Household type	Totality	Large parts	Just more than half	Less than half	Without part	Total
Original HH	87.22	3.68	1.09	0.42	7.60	100.00
New HH	77.12	3.28	1.91	1.00	16.68	100.00
Total	82.39	3.49	1.48	0.70	11.94	100.00

Table 11.5a Lands acquisition modes : land for rice crop (%)

Household type	Inheritance	Clearing	Purchase	Donation from local authority	Donation from State	Friends, family
Original HH	71.90	2.21	22.79	0.44	1.11	0.88
New HH	78.04	1.91	10.98	0.48	0.24	3.82
Total	74.86	2.07	17.11	0.46	0.69	2.30

Table 11.5b Lands acquisition modes : land for cash crop (%)

Household type	Inheritance	Clearing	Purchase	Donation from local authority	Donation from State	Friends, family
Original HH	61.67	7.50	25.00	2.50	0.83	0.83
New HH	73.75	5.00	16.25	2.50	0.00	1.25
Total	66.50	6.50	21.50	2.50	0.50	1.00

Table 11.5c Lands acquisition modes : land for fruit trees, forest (%)

Household type	Inheritance	Clearing	Purchase	Donation from local authority	Donation from State	Friends, family
Original HH	65.22	5.22	24.35	0.87	2.61	0.00
New HH	75.68	10.81	9.46	1.35	0.00	0.00
Total	69.31	7.41	18.52	1.06	1.59	0.00

Table 11.5d Lands acquisition modes : land for root and tuber crop (%)

Household type	Inheritance	Clearing	Purchase	Donation from local authority	Donation from State	Friends, family
Original HH	67.00	5.17	22.66	0.99	1.23	2.22
New HH	78.93	2.53	10.96	0.56	1.40	3.65
Total	72.57	3.94	17.19	0.79	1.31	2.89

Table 11.5e Lands acquisition modes : land for other crops (%)

Household type	Inheritance	Clearing	Purchase	Donation from local authority	Donation from State	Friends, family
Original HH	69.57	4.35	17.39	4.35	0.00	4.35
New HH	100.00	0.00	0.00	0.00	0.00	0.00
Total	81.58	2.63	10.53	2.63	0.00	2.63

Table 11.5 Lands acquisition modes : all categories of land (%)

Household type	Inheritance	Clearing	Purchase	Donation from local authority	Donation from State	Friends, family
Original HH	68.16	4.20	23.17	0.98	1.25	1.34
New HH	78.18	3.07	11.12	0.74	0.64	3.18
Total	72.74	3.69	17.65	0.87	0.97	2.18

Table 11.6 Average amount of operated lands (1,000 Ariary)

Household type	All categories of land	Rice fields	Land for cash crop	Land for fruit trees, forest	Land for root and tuber crop	land for other crops
Original HH	4,861.18	3,584.02	1,840.13	1,463.02	1,226.34	1,075.20
New HH	2,455.73	1,773.34	818.93	733.42	787.00	346.07
Total	3,721.25	2,712.75	1,422.60	1,178.86	1,020.13	801.77

Note: Earnings are reported in Ariary. 1,000 Ariary is 0.45 US$ (7 November 2013)

Table 11.7 Proportion of agricultural households having given up lands (%)

Household type	Not given up land	Given up land	Total
Original HH	639	58	697
New HH	851	7	858
Total	1,490	65	1,555

Table 11.7a Category of land transferred (%)

Household type	All categories of land	Rice fields	Land for cash crop	land for fruit trees, forest	Land for root and tuber crop	Land for other crops
Original HH	55.38	7.69	0.00	29.23	7.69	100.00
New HH	37.50	0.00	0.00	50.00	12.50	100.00
Total	53.42	6.85	0.00	31.51	8.22	100.00

Table 11.7b Proportion of landowners' households of land transferred (%)

Household type	landowners	Not landowners	Total
Original HH	90.77	9.23	100.00
New HH	50.00	50.00	100.00
Total	86.30	13.70	100.00

Table 11.7c Given up mode (%)

Household type	Given to family or friends	Sold	Expropriation by local authority	Flooding	Total
Original HH	37.29	59.32	1.69	1.69	100.00
New HH	50.00	50.00	0.00	0.00	100.00
Total	38.10	58.73	1.59	1.59	100.00

Table 11.7d Given up motivation (%)

Household type	Need money	Household problems	Already have enough parcels	To help the beneficiary household	Other motivations	Total
Original HH	63.16	5.26	0.00	24.56	7.02	100.00
New HH	75.00	0.00	25.00	0.00	0.00	100.00
Total	63.93	4.92	1.64	22.95	6.56	100.00

Table 11.8 Proportion of households possessing agricultural equipments (%)

Household type	All types	Tractor	Plow	Harrow	Other traction materials	Cart	Vaporizer	Rake	Watering system	Threshing machine	Decorti-querie	Pestle	Jerry can	Reaper
Original HH	77.47	0.43	23.39	20.66	7.32	12.77	2.01	14.92	4.59	1.00	0.57	63.13	29.99	64.28
New HH	59.21	0.00	11.31	12.35	5.59	5.48	0.82	6.41	2.45	0.35	0.12	41.03	21.68	50.00
Total	67.40	0.19	16.72	16.08	6.37	8.75	1.35	10.23	3.41	0.64	0.32	50.93	25.40	56.40

Table 11.8a Average amount of agricultural equipments (1,000 Ariary)

Household type	Mean	Median
Original HH	150.50	37.00
New HH	87.21	25.00
Total	119.76	30.00

Note: Earnings are reported in Ariary. 1,000 Ariary is 0.45 US$ (7 November 2013)

Table 11.9 Proportion of households possessing livestock (%)

Household type	All categories	Zebu	Oxen	Cow	Pig	Sheep	Goat	Chickens	Duck	Other
Original HH	71.88	23.82	24.25	3.44	19.37	3.01	4.16	59.25	22.24	1.43
New HH	55.94	11.77	15.73	0.93	14.10	2.45	4.20	45.10	15.38	0.58
Total	63.09	17.17	19.55	2.06	16.46	2.70	4.18	51.45	18.46	0.96

Table 11.9a Average amount of livestock (1,000 Ariary)

Household type	All categories	Zebu	Oxen	Cow	Pig	Sheep	Goat	Chickens	Duck	Other
Original HH	3,055.12	2,455.48	5,029.85	1,657.50	457.72	535.24	2,926.34	109.44	165.22	447.30
New HH	1,928.15	2,982.87	3,604.74	937.50	364.33	426.67	699.89	74.42	173.35	36.00
Total	2,503.70	2,654.98	4,396.99	1,477.50	413.58	480.95	1,693.23	92.50	168.96	310.20

Note: Earnings are reported in Ariary. 1,000 Ariary is 0.45 US$ (7 November 2013)

Table 11.9b Acquisition mode of livestock (%)

Household type	Inheritance	Gift	Dowry	Purchase	Farming	Other	Total
Original HH	5.16	1.34	0.53	58.86	33.84	0.27	100.00
New HH	9.20	4.02	1.16	62.37	23.04	0.21	100.00
Total	7.01	2.56	0.82	60.46	28.90	0.24	100.00